TECHNOLOGY REVIEW

June 1949

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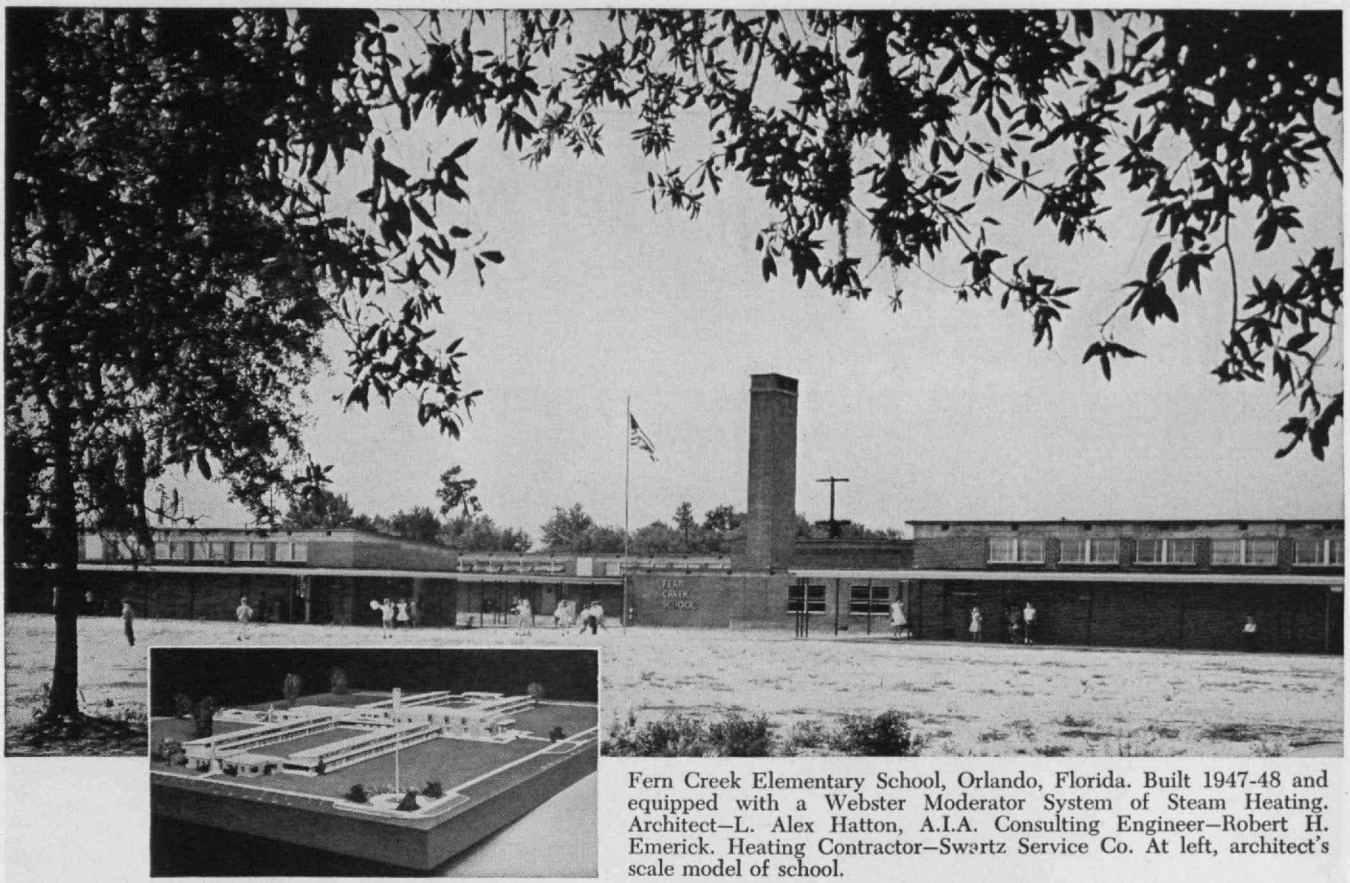

Fern Creek Elementary School, Orlando, Florida. Built 1947-48 and equipped with a Webster Moderator System of Steam Heating. Architect—L. Alex Hatton, A.I.A. Consulting Engineer—Robert H. Emerick. Heating Contractor—Swartz Service Co. At left, architect's scale model of school.

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THE TECHNOLOGY REVIEW, June, 1949. Vol. LI, No. 8. Published monthly from November to July inclusive at 8 Harmony Place, Brattleboro, Vt. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and Foreign subscription $4.00. Entered

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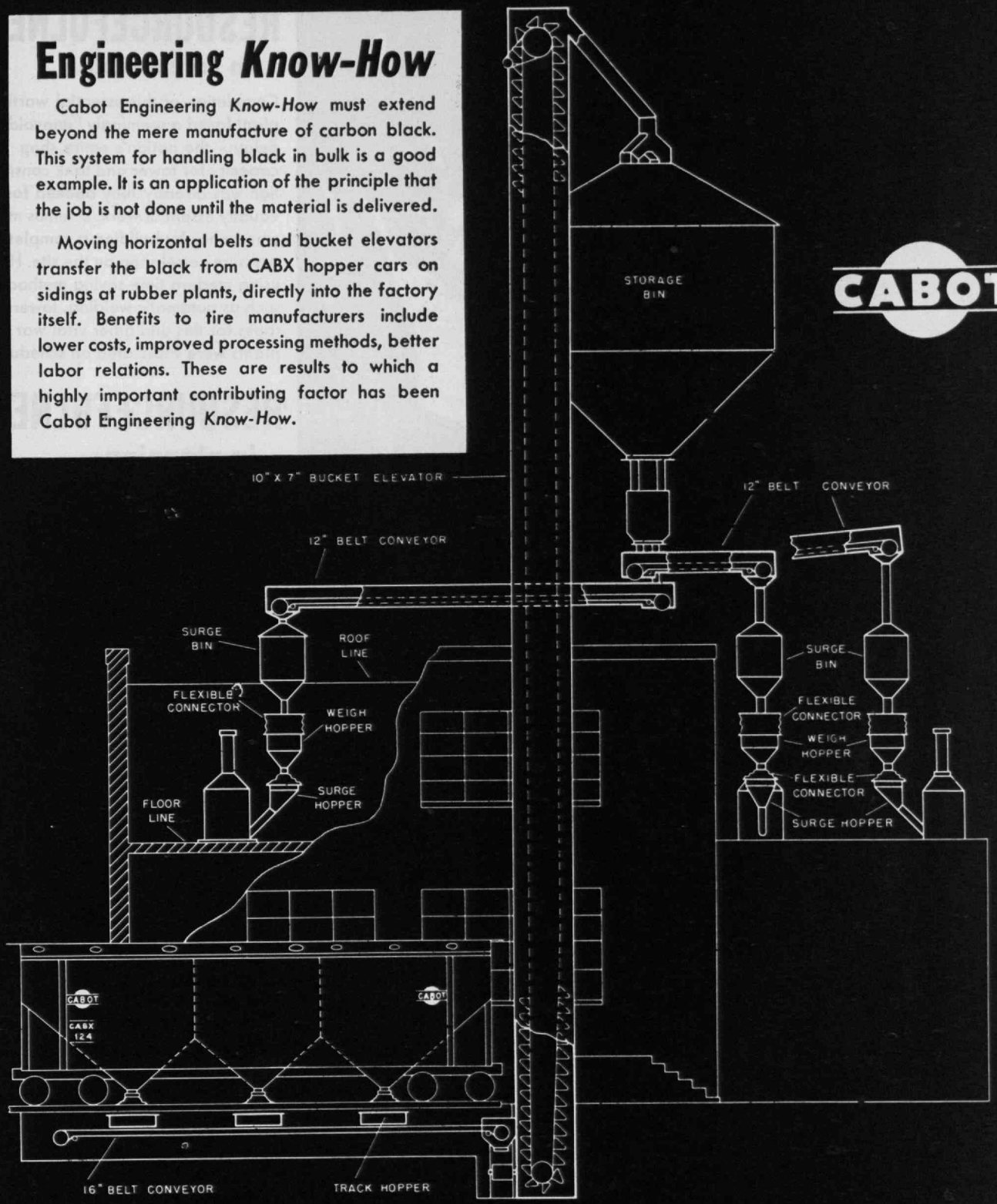
CABOT



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Resourcefulness in plant design and construction originates from two main sources: First, the company's tangible strengths . . . laboratory facilities, engineering organization, manufacturing and construction equipment. Second, the capabilities of the *people* within the company organization in facing problems that require ingenuity and innovation.

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Westinghouse *Life-Line* Motors

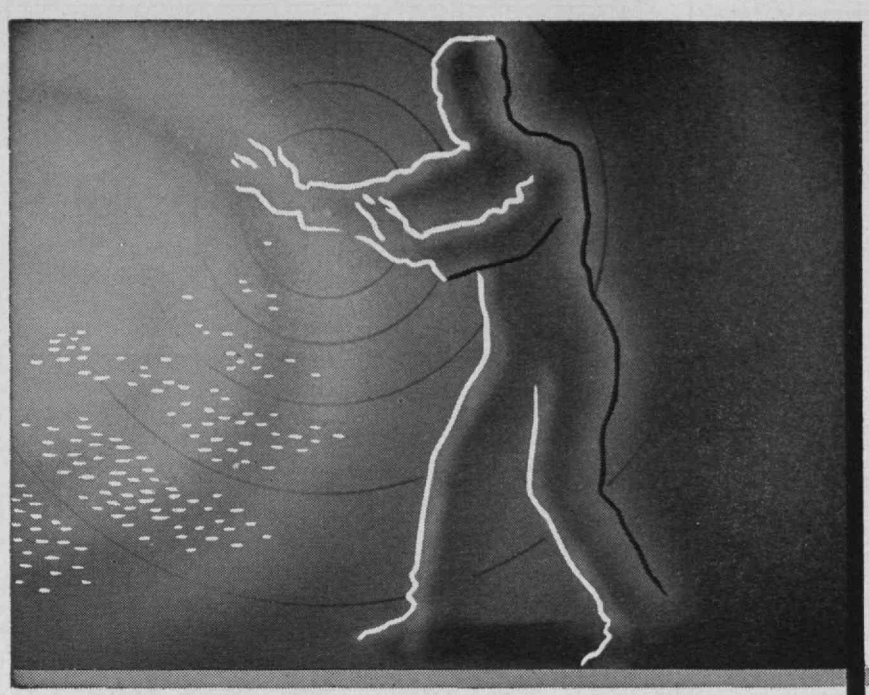
THE TABULAR VIEW

Flight Progress. – In examining half a century of mechanical flight since the Wright brothers made their first successful sky ride at Kitty Hawk, S. PAUL JOHNSTON, '21, discerns (page 500) three clearly marked avenues of activity which have made possible today's modern aircraft; the invention of the airplane itself, research on air flow, and the great strides which have been made in increasing the efficiency and power output of airplane power plants. Since his graduation from the Institute, Mr. Johnston has been continuously identified with the aviation industry. He has served as editor of *Aviation*, co-ordinator of research for the National Advisory Committee for Aeronautics, research director for the Curtiss-Wright Corporation, deputy director of the aircraft division of the United States Strategic Bombing Survey, and since the end of World War II has been director of the Institute of the Aeronautical Sciences, Inc.

That's Wright! – Amplifying that phase of American aviation which, almost a half century ago, is centered about the first successful flights in heavier-than-air machines, is the story (page 504) on the human traits and characteristics of the Wright brothers. Whatever these two brothers may seem to others, FRED C. KELLY, who knew both men intimately, regards them as quiet, kindly, homespun men with a keen sense of humor and an insatiable curiosity about those factors which first made flying possible, and then more reliable. Beginning his career as a newspaper correspondent, Mr. Kelly has traveled extensively, has operated a 600-acre farm, and has managed to do a considerable amount of writing throughout the years. He is author of nine volumes, including one on *The Wright Brothers.*

The Forgotten Man. – With "capitalists" able to take care of their own interests (before taxes, at any rate) and benevolent and protective agencies looking after the welfare of "labor," the great segment of white-collar workers has been left to shift for itself. Indeed, from many points of view this portion of the nation's laboring force is truly symbolic of forgotten men. Their case is reviewed (page 508) by PAUL MEADOWS, Associate Professor of Sociology at the University of Nebraska, whose keen interest in social movements and the human aspects of modern industrialism, enables him to prepare, with authority, his most recent Review article.

Centennial Exposition. – When this nation was celebrating its centennial as a separate political unit, in 1876, faith and confidence in the future ran high. Vast areas of the West still remained to be developed and the country was regarded as having almost limitless resources. How the U.S. International Exposition of 1876 reflected its era is recorded (page 511) by E. H. CAMERON, '13, in the first installment of a two-part article. Head of the Technical Publications Division of Jackson and Moreland, Mr. Cameron has taken the study of engineering in the post-Civil War period as his avocation.



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MAIL RETURNS

Sound Effects

FROM ROBERT SIBLEY:

I certainly got a thrill out of that issue of The Review for March which you sent me. In the first place, I got the blind staggers when I looked at that beautiful picture of the Golden Gate Bridge, the pride of California. The photograph is excellent, and I think forwards the thing you and I would like to see, namely, a fuller and higher appreciation of engineering achievement throughout this nation.

Concerning the article "Architectural Acoustics" by yourself and A. M. Clarke, I was very much interested. It is one of the sad things about American architectural design that . . . acoustics is so often overlooked.
Berkeley, Calif.

[*The Review presents the above letter from Mr. Sibley of the University of California Alumni Association which was addressed to Richard H. Bolt.* — Ed.]

No Nostalgia

FROM DONALD L. DOWLING, '20:

I am taking this means to add my congratulations to the committee who organized the M.I.T. Convocation.

I am sure that all the delegates were as proud to be M.I.T. graduates as I was, and to meet with such outstanding leaders of scientific, political, and philosophical thought.

I could not help but think that Technology is the place where you cannot talk about the good old days. Certainly M.I.T. has improved tremendously since I was graduated.
Ridgewood, N. J.

Scientific Safety

FROM WILLIAM SAMPLE, JR., '34:

I am very much surprised that a scientific magazine such as The Review would print in its February issue the article "The Price of Haste" which was based on very poor scientific study.

The certificated air lines of the United States are extremely cognizant of the fact that their very existence is based upon a safe operation and certainly would do nothing that was a compromise with safety.
San Diego 1, Calif.

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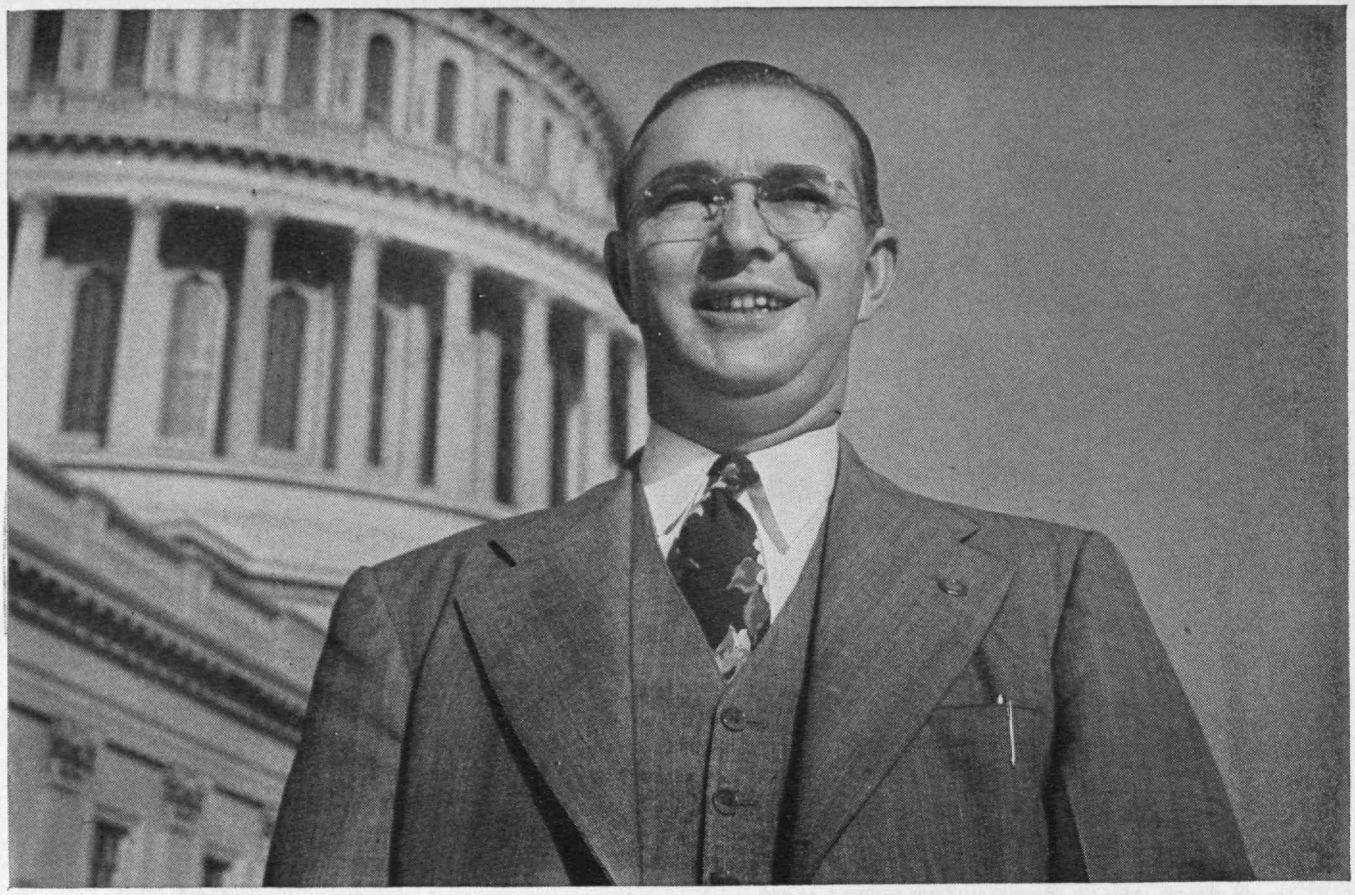

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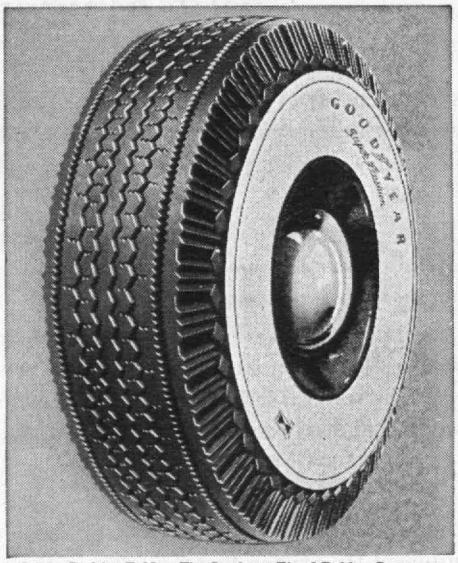

Super-Cushion T. M.—The Goodyear Tire & Rubber Company

Super-Cushion by GOODYEAR

MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Paul L. Rittenhouse

THE TECHNOLOGY REVIEW

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CONTENTS *for June, 1949*

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Joe Covello from Black Star

New York's Grand Canyon of City Streets

THE
TECHNOLOGY
REVIEW

Vol. 51, No. 8 June, 1949

The Trend of Affairs

Proof of the Pudding

THE addition of nutritionally essential vitamins and minerals to staple foods, now widely practiced in the United States, has been the target of some rational skepticism. Critics have argued: granted that local surveys indicate the existence of malnutrition in this country; and granted that laboratory studies show that the addition of specific nutrients to the diet can remedy such deficiencies; nevertheless, the final element of proof, evidence of improvement of nutritional deficiencies in sizable population groups by vitamin-mineral fortification of their food supply, has been lacking. Such evidence has just become available, however, as a result of surveys conducted in Newfoundland in 1944 and in 1948, with universal enrichment of flour and bread, and fortification of margarine, enforced there between the time of the two surveys. (The final results of the Newfoundland demonstration were presented, by the team of eminent scientists who did the work, before a special meeting of nearly 1,000 physicians, nutritionists, food-industry representatives, and others interested in the nutritional welfare, at the Hotel Biltmore in New York City, on April 4, 1949.)

Newfoundland was an ideal place to study effects of radical improvements in nutritive value of the food supply. It is an island; its population is stable, compact, and homogenous. The climate is harsh and the soil barren, with the result that little fresh food can be produced locally, and dependence upon food imports is almost total. Newfoundland's economic conditions, at least until recently, have been poor; practically the only source of livelihood has been precarious incomes wrested from the sea. It is not surprising, then, that through the years the existence in Newfoundland of disability due to malnutrition has been observed repeatedly.

In 1944, the public-health officials of Newfoundland concluded that addition of vitamins and minerals to staple foods might be an answer to the problem of nutritional deficiencies on the island. As a preliminary to such improvement of the food supply, the Government of Newfoundland in the summer of 1944 invited a group of prominent physicians and biochemists, from the United States and Canada, to evaluate the nutritional status of the Newfoundland population. At that time, the survey team found widespread evidence of malnutrition, including clinical signs and symptoms, levels of blood and urine constituents as revealed by biochemical determinations, the general temperament of the people, and even downright disability. The clinical and biochemical evidence obtained was objective and incontrovertible. Even more striking, although admittedly open to argument as based on subjective observations, was the demeanor of the people. Many of them were apathetic and listless. This dullness was particularly evident among the children, who were lethargic and disinterested, and who were said to have waited around like "little old men" for their turn to be examined. The specific nutritional defects found in 1944 were attributed to suboptimal intakes of Vitamin *A*, thiamine (Vitamin B_1), riboflavin (Vitamin B_2), niacin (another member of the Vitamin-*B* complex) and ascorbic acid (Vitamin *C*).

Upon completion of the 1944 survey, the Newfoundland Government made compulsory the fortification with Vitamin *A* of all margarine distributed on the island, and the enrichment of all white flour with thiamine, riboflavin, niacin, and iron. Later, bone meal was added to the flour, mainly as a source of calcium. At the same time, a program of nutrition education was begun. Furthermore, distribution of milk solids and of cod-liver oil was initiated in the schools, and free orange juice was made available to nursing mothers and to infants.

In 1944, there were 868 Newfoundlanders examined. When the survey team returned, exactly four years later, they were able to re-examine 227 of the same individuals they had seen in 1944; and enough additional persons were tested to bring the 1948 total to exactly the same as that for 1944. Both the large proportion of "repeaters," and the fact that the total group each time was numerous enough to constitute a statistically significant sampling of the entire population, make valid direct comparisons between 1944 results and 1948 results.

The observations recorded in 1948 revealed dramatic improvements over 1944 in some respects, but an equally striking lack of improvement in one regard. Abnormalities seen in 1944 and attributed to deficiencies of Vitamin *A*, thiamine, riboflavin, and niacin were markedly reduced in 1948. Biochemical determinations of blood and urine constituents related to these nutrients showed much closer approaches to optimal levels. Furthermore, the Newfoundlanders in general appeared to have become alert, rather than apathetic as they were in 1944. The children in particular were lively, mischievous, and curious, in keeping with their youth. Despite the fact that this latter improvement created some practical difficulties for the survey team, in holding the youngsters in order long enough to examine them, it was gratifying to the team as evidence of a highly desirable gain in nutritional status.

In addition to the nutritional improvements just described, it was discovered that the general death rate, the tuberculosis death rate, and the infant death rate all had fallen between 1944 and 1948. These changes cannot, however, be cited as direct evidence of nutritional gains, as the relationship of nutrition to longevity and resistance to disease is still controversial (see The Review, June, 1948, page 427).

Recall that in addition to the nutritional defects discussed above, evidence of Vitamin *C* deficiency had been observed in 1944. Signs of this particular type of malnutrition were actually more prevalent in 1948 than in 1944. This relationship serves as a valuable control on the demonstration. For between 1944 and 1948, economic conditions in Newfoundland had improved somewhat, mainly as a result of the placing of military and naval installations, and of commercial airports, upon the island. Hence, it might be contended that nutritional improvements occurring during the interval were due to availability of more money for food purchases, rather than to enrichment of flour and fortification of margarine. If this were true, improvements similar to those accomplished with regard to the *B*-complex vitamins and Vitamin *A* should also have occurred with respect to Vitamin *C*. This was not the case, despite the fact that the Vitamin *C* level of the Newfoundland dietary might have been improved as a result of limited free orange juice distribution, and also as a result of attempts made through educational means to correct traditional cooking methods that had tended to destroy a large proportion of the Vitamin *C* naturally present in foods. The lack of improvement in Vitamin *C* deficiency indicates that improvements with regard to the other nutrients is attributable to their addition to flour and margarine used by the Newfoundlanders.

Nutrition education and direct distribution of nutritious foods to special-need groups cannot be disparaged, as they are valuable parts of a well-rounded, long-term nutrition program. Nevertheless, the Newfoundland demonstration has shown that the most quickly effective way to remedy prevalent nutritional deficiencies is to add the lacking nutrients to widely consumed staple foods.

Rhine Messenger

In interested circles it was known for some time that the Germans employed three types of long-range missiles during the battle for Antwerp. One of them was the well-known flying bomb, *V-2*, and the other was the equally well-known, long-range rocket also known as *V-2*. The third type was said to be a long-range rocket known as the *Rheinbote* or "Messenger from the Rhine." Until the British Interplanetary Society recently succeeded in getting a general description of *Rheinbote* declassified no specific information about this rocket could be obtained for publication. Now it is clear that the *Rheinbote* was a remarkable, if not very successful, missile, and of more than usual interest because of certain engineering features which were anything but commonplace.

The *Rheinbote* was remarkable for two reasons: It was a solid-fuel, long-range rocket, and it was also the first rocket of large size to utilize separate units functioning successively in the so-called step principle. The *Rheinbote* consisted of three steps, that is, of three rockets forming a unit and operating one after the other. The whole was launched from a long platform which could be aimed and elevated in about the manner of the boom of a steam shovel, and having rails on top of this structure for initially guiding the missile in its takeoff.

The missile was a development of the firm of Rheinmetall-Borsig, and, as far as can be ascertained, was used only once, in November, 1944, when about 20 long-range rockets of this type were fired into Antwerp from the Dutch city of Zwolle. The total range was about 137 miles or 220 kilometers. When ready for firing, the missile must have been a strange-looking device. It was a long and rather narrow cylinder with a bulbous tail end from which six exhaust nozzles protruded, and equipped, at roughly regular intervals, with four sets of six stabilizing fins each. Each set of fins marked the lower end of one "step."

The performance of the missile may be determined from a graph published in the July, 1948, issue of the *British Interplanetary Society Journal.*

A booster unit was provided primarily to clear the rocket from the launching platform. The booster was electrically ignited and burned for only one second, accelerating the rocket to a velocity of about 820 feet per second (250 meters per second). After a delay of one second, during which the velocity dropped to about 700 feet per second, the first step or unit of the rocket was ignited by a fuse mechanism which was sensitive to acceleration. The delay in the ignition of each step appears to have been due to time required for the priming mixture to burn. The priming mixture consisted of a composition of nitroglycerine and flashlight powder which, in turn, ignited a charge consist-

Paul L. Rittenhouse

Despite continuous service to New Yorkers for more than half a century, the Brooklyn Bridge continues to draw enthusiasm and admiration, and provides a popular subject for photographers. As an amateur photographer in New York, Paul L. Rittenhouse has captured this impressive view of the famous engineering structure.

ing of black powder and a kind of aluminum thermite. In spite of its complexity, this method provided a sure way of igniting the propelling charge, regardless of temperature and other conditions encountered during flight of the rocket.

The first step, catching fire two seconds after take-off, burned for five seconds and accelerated the missile to a velocity of about 1,700 feet per second or 500 meters per second. The second step caught fire at the beginning of the 12th second, after the velocity had dropped to about 1,550 feet per second. The second step, burning for a period of five seconds, like the first, accelerated the rocket to a velocity of about 3,200 feet per second, or close to 1,000 meters per second. The third step caught fire at the beginning of the 22d second and burned for four and a half seconds. During the five-second delay, between the second and third step, the velocity had dropped to about 3,000 feet per second, but the third step accelerated what was left of the missile to a velocity of about 5,350 feet per second or 1,630 meters per second. The missile was launched at an angle of 65 degrees and attained a height of 8.7 miles, and, at a horizontal distance, of 6.2 miles from its launcher when all the propellant powder had been used up after 25.5 seconds of flight. After the powder was fully consumed, the unconsumed portion of the rocket, traveling on momentum only, reached the peak of its trajectory near the 130th second after take-off, when it was 49 miles (78 kilometers) high and 68½ miles (110 kilometers) from either launcher or target. Impact took place during the 260th second from take-off, 137 miles from the launching platform of the rocket.

The dimensions and weights of this missile are given in the table, adapted from the *British Interplanetary Society Journal* mentioned above.

	Dimensions		*Weights*	
	Feet	Meters	Pounds	Kilograms
Complete missile, length	37.4	11.4	3,773	1,715
Booster unit, length	6.23	1.9	1,529	695
Booster unit, diameter	1.71	0.535	—	—
Booster unit, propellant	—	—	539	245
First step, length	11.5	3.5	935	425
First step, diameter	0.88	0.268	—	—
First step, propellant	—	—	308	140
Second step, length	11.5	3.5	869	395
Second step, diameter	0.88	0.268	—	—
Second step, propellant	—	—	308	140
Third step, length	13.1	4.0	440	200
Third step, diameter	0.623	0.19	—	—
Third step, propellant	—	—	132	60

The warhead had the same diameter as the third step, its length and over-all weight are included in the figures for the third step given in the table. Together, the burned-out third step plus the warhead which arrived at the impact point weighed 297 pounds or 135 kilograms. The weight of the warhead proper was 88 pounds or 40 kilograms. This is slightly less than the 95-pound weight of the shell of the 155-millimeter *Long Tom*. The warhead of the *Rheinbote* probably accounted for more than 60 per cent of the weight of the warhead. Since the weight of explosive in an artillery projectile is only from 10 to 15 per cent of the weight of the shell, the *Rheinbote's* warhead contained more explosive than the *Long Tom* shell.

To transport some 60 pounds of explosive over 137 miles required the expenditure of a three-step rocket with booster, and a total of almost 1,300 pounds of propellant. One wonders whether the German engineers who designed this rocket actually thought that they were producing an effective weapon or whether They were merely indulging in an experiment. In the case of the *Rheinbote*, the latter proved to be true.

AMERICA'S FIRST

Half Century of Flight

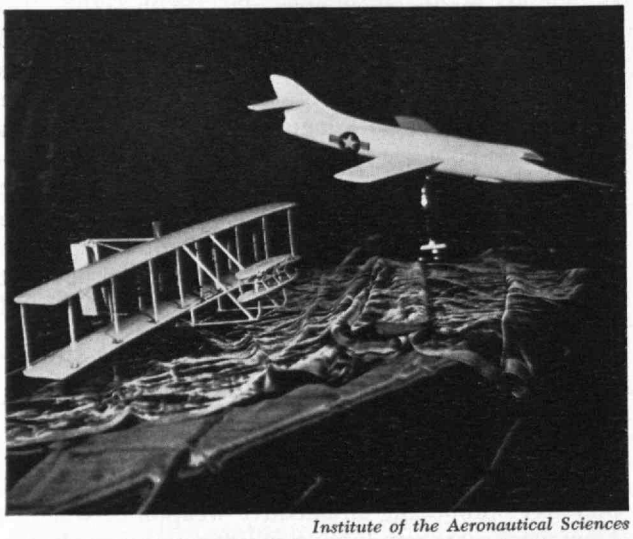
Invention of the Airplane, Scientific Study of Air Flow, and Development of Highly Efficient Engines Mark Progress in Mechanical Flight

By **S. PAUL JOHNSTON**

To those of us who sometimes think of World War I as only yesterday, it comes as somewhat of a shock to realize that the history of heavier-than-air flight is about to round the half-century mark. Although we may have spent a lifetime in this aviation business, to us it is still fresh and new. Most people at 50 have collected a bit of moss around the edges and are beginning to creak at the joints. But aviation, after having survived an anemic youth and a colorful and reckless adolescence, is only now approaching the brink of its maturity. Any story of the first half century of mechanical flight is, therefore, but the log of a take-off, a record of the launching of a flight that will carry man toward horizons beyond his present dreaming. The stars are yet a long way off, but we are closer to them than we were in 1899!

It is impossible to record here the details of those formative years – all the mistakes that held us back, all the achievements that carried us ahead. Whole libraries have been written on such subjects and the story is far from complete. The important thing is not "what happened?" but "where are we going?" As in tracing the history of individuals, we must try to recognize the critical landmarks that establish trends. Once the curve has been plotted we may extrapolate a forecast for the future with some degree of assurance.

The most obvious, and also somewhat hackneyed, approach is to seek a measure of aviation progress by studying the achievements of pilots who have made headlines. We read, for example, how T. Roscoe Merriwell astonished his neighbors in 19– when he attached a sewing-machine motor to an old box kite and flew around his father's cow pasture. A few years later the local press notes Roscoe's remarkable flight up the West Branch of Muddy Creek – "no hands." Presently we find our hero battling his way across the stormy South Atlantic in a flimsy quadriplane, provisioned only with a fried-egg sandwich and a bottle of cold tea. Next year, in a supersonic space ship he will visit the moon. And so it goes.



Institute of the Aeronautical Sciences

A study in contrasts. The Wright brothers' biplane of 1903 and a model of the Douglas Sky Rocket.

But such things, astonishing as they may be, are only the symptoms of aviation progress. They are the things that gay, and gallant, and sometimes foolish men do with tools that are furnished them by men who seldom make the headlines, the aeronautical scientists.

In the beginning, the experimenter, the scientist, and the pilot were generally indistinguishable. They were, more often than not, one person. But since the end of the trial-and-error period of aviation history (about the beginning of World War I), that has not been true. The really significant milestones have been set up by men who have spent their lives peering into test tubes, laboring over drafting boards, and running wind tunnels, towing tanks, and test cells of research laboratories. Aviation progress has always been dependent upon the engineer and the scientist. Actually, every chapter of the story of air progress was already written by the time the headlined pilot stepped into the cockpit.

Let us consider, then, the significant milestones that have been erected by the aeronautical scientist during the past half century. Again, the record here cannot pretend to be complete. From a quick survey of the highlights, however, the reader may readily deduce for himself why certain pilots were able to do certain things at certain periods in aviation history. He may also be able to forecast, with some accuracy, what pilots of the near future may be able to accomplish in the air.

Before the turn of the century, Samuel Pierpont Langley made a thoroughly scientific approach to the problem of flight. If he failed to achieve his goal, it was not for lack of long and painstaking research. In his pre-Smithsonian days, as a professor in Pittsburgh, he built a whirling-arm device on which he tested the aerodynamic characteristics of birds and of bird wings, and studied the air resistance of various ob-

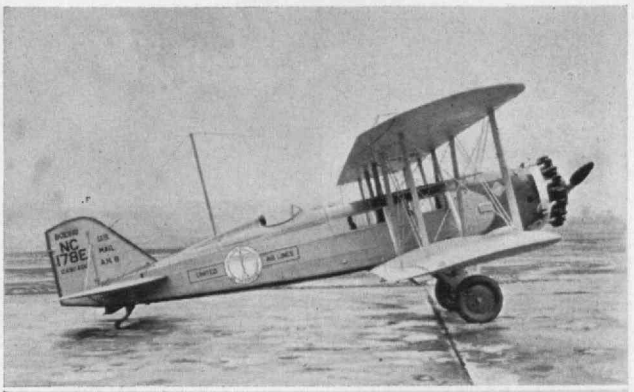
jects. No hit-or-miss researcher, he recorded his data in great detail. Although his findings may have been insufficient for his purposes, or possibly he himself misinterpreted them, his approach was sound. He must certainly be credited with the title of our "First Aeronautical Scientist." Abortive as it turned out to be, his work must be listed as significant.

Then came the Wrights. Wilbur and Orville were tireless experimenters. They lacked the formal education of the scientist of the day, but they more than made up for it by their insatiable curiosity. They constantly sought explanations for the observed behaviors of their kites and gliders. Before they attempted to build their first powered airplane they built a wind tunnel to check those observations. It was certainly the first in America. They made endless computations, checked their theories of lift and drag of wings, tested various propeller sections and blade forms. They studied Langley's data. They were familiar with the results obtained by Lilienthal in Germany. Thus they became sure of themselves. Long before 1903 they knew that they could fly. They had proved it to themselves, by research.

Once it was proved that mechanical flight was possible, the scientific spirit that had animated Langley and the Wrights languished for a time. The decade 1904–1914 was characterized by mechanical rather than scientific genius. Practical men took the basic principles that had been established by the Wrights, and developed bigger and better flying machines of the same general pattern. Progress was made, but by cut-and-try methods. Airplanes became larger, sturdier, more manageable. They flew somewhat faster, and quite a bit farther. By 1913, for example, an assault on the North Atlantic was projected by Glenn Curtiss. But we were well into World War I before much serious thought was given to long-range improvement via the channel of planned scientific research by trained personnel.

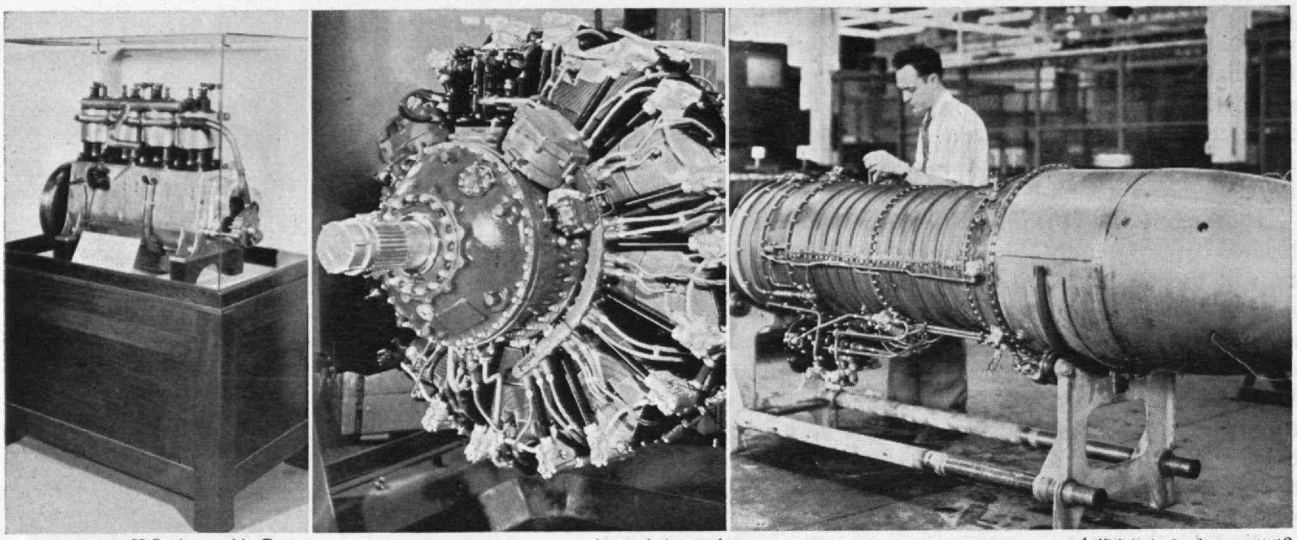
As a matter of fact, we were well into the third decade of the Twentieth Century before any really significant changes occurred in the configuration of aircraft. The best of the post-World War I machines could be described in the same general terms used for the 1910 vintage. They were almost invariably stick-and-wire biplanes. They had thin, fabric-covered wings attached to some sort of enclosed or semi-enclosed fuselage. Engines were water cooled, with large protuberant radiators. Landing gears, unashamed, exposed their unlovely legs to the passing breeze.

As auxiliary devices were invented, matters progressed from bad to much worse. Radio masts, guns,



Transport Progress: (1—at top) *Boeing* 40-B *had an open cockpit for the pilot and a cramped cabin for four in the mail compartment;* (2) *The Boeing* 80-B *of 1930 was a first step in the direction of increasing passenger comfort and safety;* (3) *The Boeing* 247-D *was the transition between the* 80-B (above) *and the thoroughly modern types* (below); (4) *Workhorse of the air lines, the Douglas* DC-3 *came into service about 1935 and is still going strong;* (5) *Modern progress exemplified in the Lockheed Constellation. This type, together with the Douglas* DC-6 *and the Boeing Stratoliner, now comprises the bulk of our four-engine air transports.*

Boeing Photos (top three)
Inst. of Aero. Sciences (fourth) *Pan American Photo* (fifth)



U.S. Army Air Corps | United Aircraft | Official U.S. Navy Photo

Engines have become bigger and more complicated. (left) *This simple, four-cylinder, 28-horsepower automobile type engine, developed by the Wright brothers, flew the Army's Wright biplanes in 1909.* (center) *The air-cooled radial engines reached a high degree of efficiency in time to power most of the fighting planes of World War II. Shown here is the Pratt and Whitney 2,400 horsepower double Wasp.* (right) *The advent of the turbo-jet engines has opened up a whole new era of aircraft performance.*

and landing lights were simply attached in the most convenient spots. Finally, aircraft became so incredibly encumbered that the poor engine builders began to despair of ever providing enough power to drag them through the air.

Then, almost overnight, came the revolution. The modern, clean, all-metal airplane, with everything retractable that was not needed for flight, put in an appearance *circa* 1930. Offhand, that seems a good point to erect another milestone for science. But these new and efficient machines had not sprung full-blown from the forehead of some inventive genius on January 1, 1930. They were the end point of long years of careful and patient research by many men. Their genesis can be traced back to an event that occurred many years before they appeared in the sky.

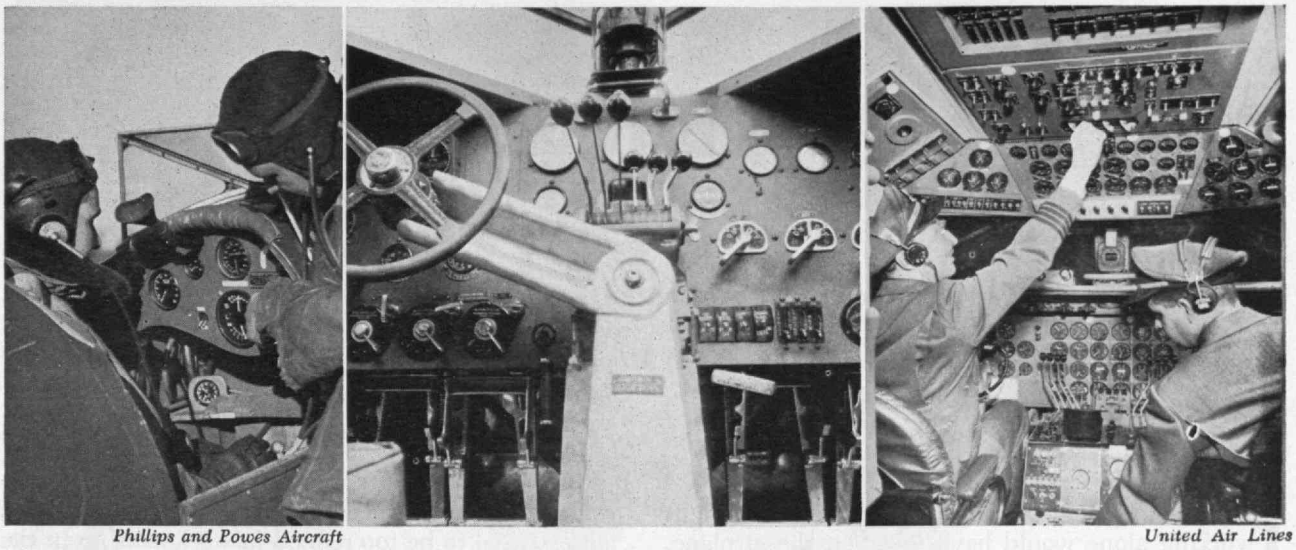
When the United States was finally drawn into war in 1917, it became quickly apparent that our collective ignorance in aeronautical matters was shockingly profound. Prior to 1914 we had lagged far behind other countries in developing aircraft suitable for military, or any other, use. When the crisis came we tried to catch up by adapting British and French airplane designs to our purposes. That effort proved both costly and abortive. We found ourselves getting nowhere at all. Then came the event that must certainly be marked by a milestone. The National Advisory Committee for Aeronautics was formed to "advise" the President and the Congress what to do about aviation. That was the real turning point; the rebirth of the scientific approach. For a time, the National Advisory Committee for Aeronautics was simply an advisory board. It soon became evident, however, that it could not produce much in the way of constructive suggestion unless it could perform some practical research on which to base its recommendations. A little money was set aside for the purpose, a few aircraft were assigned by the Army and the Navy, a few people (engineers, physicists, and pilots) were recruited. A small corner of Langley Field, Va., was staked out as a temporary site for this country's first research laboratory in the aeronautical sciences.

As a matter of fact, no special monuments need now be erected to mark that event. The great laboratories of the N.A.C.A. at Langley Field, at Moffett Field, and at Cleveland stand as evidence of the importance that we now attach to the scientific approach to our aeronautical problems. From them have stemmed the basic scientific data from which our modern airplanes have been evolved. They have been continuously at work to find better wing sections, to improve control at high and at low speeds, to reduce drag and to increase power-plant efficiency. The evolutionary processes of research in various fields — aerodynamic, structural, propulsive, and operational — produced results that made possible the revolution in airplane design that occurred in the late 1920's. The excrescence-studded stick-and-wire biplane types of World War I gave way to the clean and efficient, smooth-skinned monoplane of today, on which even an exposed rivet head is *de trop,* largely due to the pioneering work carried on by the National Advisory Committee for Aeronautics.

At that point we made a real break through the performance limitations of the 1920's. Designers had been working in an area of diminishing returns. Now the lid was off. In the space of a few years, airplane speeds doubled, ranges went up in thousand-mile increments. At the same time, operating efficiencies were realized that made commercial operation of air transportation an economic possibility. And, for the first time, the airplane became a really terrible weapon of war.

Progress over the first few years of the 1930's was rapid, as designers took full advantage of the possibilities of the new types. It was then that the *DC-2's* and *DC-3's* replaced the Fords and Condors on the air lines. Then, too, box-kite bombers and fighters gave way to the Martin *B-10* and Boeing *B-17* bombers, and the famous fighters in the *P-36, P-38, P-40,* and *P-47* categories.

But well before the outbreak of World War II another area of diminishing returns was reached. With the best of the new designs, with the best of the power



Phillips and Powes Aircraft *United Air Lines*

Cockpit contrasts: (left) *In the 1920's pilots had few instruments and relatively little to watch inside the cockpit.* (center) *The 1930 cockpits were complicated mainly by the addition of multiple engine controls, but were still within the capabilities of a single pilot's comprehension.* (right) *The complicated cockpit of a modern air liner* (*in this case a Douglas* DC-6) *requires the combined and continuous attention of two or three men. Modern practice puts engine controls in the hands of a flight engineer.*

plants then available, airplanes could go only so far, so fast. In spite of intensive research by the N.A.C.A. and other agencies during the 1930's, airplane performance was making an obviously asymptotic approach to predictable limits.

The controlling factor was power for propulsion. The aerodynamicists, through increased knowledge of air-flow phenomena, had reduced the power required for flight to a remarkable degree. At the same time, engine researchers and engine builders had not been idle. They continuously stepped-up the power of engines and the efficiency of propellers. But as "our wings grew faster," the power-required curves began to diverge from the power available. Bigger power plants needed larger and larger airplanes just to carry them. Drag went up, and as speeds approached 500 miles per hour, propeller efficiencies went past their peaks. Once again definite performance ceilings were in sight.

This situation persisted during most of World War II. Then another event occurred for which another milestone must be erected – the advent of jet and rocket-power plants.

Born of intensive research in Germany and in England, and later in the United States, these newer types of engines put almost unlimited power into the hands of airplane designers. Power available curves again soared sharply upward, quickly passed the parameters of power required by such a wide margin that former performance limits were quickly forgotten. Flight at supersonic speeds, demonstrably impossible by former standards, immediately became something to conjure with.

It is now well known that the so-called sonic barrier has been breached, not once, but many times. The grave difficulties and dire perils that were suffered to beset human pilots who dared exceed the speed of sound have turned out to be largely products of the imagination – by-products of our inborn fear of the unknown. As scientific step-by-step methods have been applied to such seemingly insurmountable problems, the solutions have unfolded before us.

In this brief survey of the first 50 years of mechanical flight we have identified but three milestones: the invention of the airplane itself (1899–1909); the scientific study of air-flow phenomena that led to low-drag airplanes of today (1918–1928); the research that led to the development of engines capable of extracting tremendous power efficiently from chemical fuels (1940–1950).

In any roomful of aeronautical people, many, and violent, arguments would immediately break out. Oversimplification would be the major charge leveled at the preceding paragraph. Hundreds of other significant developments would be cited. What about materials development? What of instrumentation? Radio? Radar? Better fuels? Better this and better that? But, important as all those things may be, they are but trail blazers between the really major milestones. For the most part, they may be resolved back into elements of the larger problems.

What will be the next milestone and when? The first appears not too difficult of prediction. It will doubtless have to do with the application of nuclear energy as power for flight. What form it may take is impossible to say at this time, but there is no question that the appearance of a successful nuclear-powered engine of a reasonable size and weight would again revolutionize the concept of human flight. When such a thing will happen is another matter. The crystal ball is none too clear. The chances are, however, that there are undergraduates at Technology today who will be called upon to deal with the practical engineering aspects of the problem before they finish their careers. Who can predict whether the call will come in five, ten, or twenty-five years?

The comic-strip artists and science fiction writers are again having a field day. From Jules Verne to Rick Yager their stock is going up. Little that they predicted in the past has failed to come true, so why hold back now? New York to Paris in an hour? Rockets to the moon? Man-made earth satellites? Yesterday's difficult problems are being solved today. Have patience, the impossible ones will take only a little longer.

TRAITS OF
The Wright Brothers

Modesty, Thoroughness, and Practical Common Sense Characterized the Two Brothers Who First Flew in Heavier-Than-Air Machines

By **FRED C. KELLY**

IT is unlikely that either Wilbur or Orville Wright working alone would have invented the airplane. The job seemed to require this glorified team, each giving advice and support to the other. By carefully weighing and vigorously combating each other's theories, they overlooked no snags.

At times their minds seemed to act as one. An example of this was startling, almost beyond explanation. After they had been working late one night in their shop, Orville returned home on nearby Hawthorne Street a little ahead of Wilbur. He was in bed almost asleep when he heard Wilbur come in. A surprising thing was that Wilbur forgot to bolt the front door. Orville reminded him of his oversight. Then when Wilbur went back downstairs to put on the lock, Orville thought to himself, "It isn't like him to be so absent-minded. I'll bet he does something else peculiar. He'll blow out the gas in his room." Why he thought Wilbur would blow out the gas, instead of turning it off, he never could explain; but he felt sure of it. Fearing he would drop off to sleep he sat up in bed until he saw that the light in Wilbur's room was out. Then he went to investigate. Sure enough, the gas was still turned on; Wilbur had blown out the flame! Except for Orville's presentiment they both could have been asphyxiated.

They found it fun working together. Once in speaking to me of an acquaintance who seemed to be seeking happiness through material possessions, Orville shook his head and said: "I can remember when Wilbur and I could hardly wait for morning to come to get at something that interested us. *That's* happiness!"

Wilbur, at the beginning, seems to have had more hope of flying than Orville did; and he felt more disappointment when progress was slower than expected. At the end of the 1901 gliding experiments, Wilbur declared it would be "a thousand years" before man would fly. He doubted if it would be worth while to do any more gliding, even after the brothers' wind-tunnel research had given them the knowledge (which their predecessors had lacked) to build wings of the right design. Until a week before they set out for Kitty Hawk for the 1902 experiments, Wilbur was not sure he would go. Orville had to use all his powers of persuasion to rekindle Wilbur's enthusiasm.

The brothers were about equal in ability to work with their hands or with tools, and they were alike, too, in their feeling that so long as they followed sound principles and attained mechanical precision it was not essential to be too refined in workmanship in the sense of making a device look pretty. Their first powered machine may seem almost crude in comparison with other machines with which men tried to fly, but the difference was that theirs could fly! When absorbed in his thoughts, Wilbur, more than Orville, was inclined to be oblivious of his surroundings or of whatever he was doing. Sometimes he would slowly pace the floor with hands clasped behind him humming a popular song, and there were often long lapses between words. Once he was softly singing, "The flowers that bloom in . . ." and after a minute or so one of his nieces yelled: "Uncle Wilbur, aren't you *ever* going to say *spring*?"

Orville sometimes upbraided Wilbur for talking to him as if he were still a "kid brother," but there was complete sympathy between them. Even before they started to work on their first glider, they had quit keeping separate bank accounts. Each drew as much money as he wanted from their joint account in the Wright Cycle Company, and neither paid the slightest attention if one spent more than the other. When Wilbur received prize money for one of his flights in France, it was reported that he promptly counted out Orville's share. The truth was that he handed it all to Orville, who usually attended to their banking.

When they had conferences with others, Wilbur was likely to do most of the talking. This was not because he was the more communicative. Orville felt that the older brother was entitled to take the lead. Wilbur was more disposed than Orville to talk with newspapermen — probably because he had more faith than Orville in the value of publicity. In ordinary conversation, however, Wilbur was the less communicative of the two.

Yet, at one time, Wilbur considered becoming a lecturer. After the successful experiments with the 1902 glider, he wrote to the Redpath Lyceum Bureau suggesting that he be booked to lecture on man's attempts to fly and the nature of the problem. The Bureau's reply in December, 1902, was that such a lecture might be successful provided it included enough humor! If Wilbur would furnish a lantern operator and pay all his expenses, he might receive from $50 to $75 for each lecture, less the Bureau's 20 per cent commission. As it did not promise a bonanza, Wilbur gave up the lecture idea.

It was a great day at Kitty Hawk when a heavier-than-air machine carried the first human being in flight. By today's standards, the early flying machine was a fragile affair, but photographers were on hand to record the event permanently on film.

Keystone View Company

Neither Wilbur nor Orville was much given to paying compliments. Roy Knabenshue, who was in charge of the exhibition work in the early days of The Wright Company, recalls the time he suggested to Wilbur that since a certain employee was doing excellent work it wouldn't hurt to let him know it was appreciated. Wilbur's reply was something like this: "He knows we like his work. Why tell him so? Did I ever tell my mother I loved her? Or did she say she loved me? Of course not. That was understood. When Orville had his accident at Fort Myer I never cabled from France I hoped for his speedy recovery. He knew I would hope that."

Wilbur liked to write, and could express himself with clarity. When he prepared his first draft of the application for the Wrights' basic patent, which later stood the test of the courts, he never had to revise more than a phrase or two. From early youth Orville had the same gift for lucidity in the written word; but unlike Wilbur, he found writing irksome and never did it for fun. Wilbur's letters, particularly those to his family, usually showed his characteristic humor. In England he went to look at an airplane an experimenter had been working on. The designer had added one thing after another, trying to make it capable of flight, and Wilbur described it as remindful of an old English country house, remodeled from time to time, to which had finally been added a sleeping porch and a summer kitchen.

Wilbur Wright Meets Gelett Burgess

At the time Wilbur was flying in France, Gelett Burgess, '87, the American author, sent him a note from Paris, asking to see him. Wilbur wrote back that he'd be glad to meet him as he had read one of his books more often than any other. Burgess supposed that Wilbur referred to a book of philosophical essays. Wilbur never told him that the book was one of verses for children. He had read them over and over to his nieces and nephews, along with Mother Goose!

One casual remark by Wilbur has since been quoted all over the world. When he was asked to make a speech at a dinner in Paris he said: "I know of only one bird—the parrot—that talks; and it doesn't fly very high." Wilbur's humor in his early youth sometimes showed itself unexpectedly, to the great delight of Orville's playmates. One night he gave a little talk before a group of friends, and the next day Orville's chum, Edward Sines, asked him if he couldn't repeat the gist of it.

"I can let you hear a phonograph record of it," Wilbur solemnly replied. He stepped into an adjoining room and in a squeaky voice, imitating the phonograph recordings of those days, gave what he said was his talk of the previous night. Not one word was intelligible and every few seconds he interrupted himself with cheers, laughter, hand clapping or stamping of feet, supposed to come from his audience.

Orville, too, always had plenty of humor, although it was usually less homespun than Wilbur's. I once showed him a letter from someone who thought the early Wright flights during 1903, 1904, and 1905, should not be counted as antedating all those by later experimenters, because, said the writer, they were not witnessed by any committee of scientists. I shall never forget the phrasing of his comment: "Here is a great opportunity for someone – why not you? – to crowd the name of Columbus out of the pages of history. Columbus failed to have 'officials' of a regular organization, created for the special purpose of homologating discoveries, on hand when he landed in America!" That word homologate was a new one to me. I found that it means to declare approval.

Sometimes it was not easy to be sure whether it was his humor or his modesty that found expression. One night Milton Wright, a nephew of Orville, called him by telephone to tell, with fatherly pride, of the fine

scholarship record his son had made in high school. "At that rate," remarked Orville, "the Wright family may become famous.

Some years ago, when Griffith Brewer, then President of the Royal Aeronautical Society in Great Britain, was Orville's guest, the talk turned to how simple and easy an invention often looks after it has been made, so much so that almost anyone might think he could have done it. Then Brewer quoted a line of poetry "– so easy it seemed, once found, which, yet unfound, most would have thought impossible."

"I have been trying for years," said Brewer, "to find out who wrote that line." He and Orville began to ransack books of quotations, but could not find what they sought.

By strange coincidence, in Orville's mail the next morning, was a letter from a man in Seattle seeking an autograph. The writer quoted that line of poetry, and gave the source; Book VI of Milton's *Paradise Lost*. Orville said nothing about this windfall, because it had put into his head an idea for a practical joke. That night after dinner, Orville located his copy of *Paradise Lost* and surreptitiously slid out a book half an inch or so, on the shelf just above it, to serve as a marker. Then he said to Brewer: "It looks as if we're never going to be able by ordinary research to identify the author of that line of poetry about invention – so maybe we ought to try psychic means." Brewer looked shocked that so eminent a scientist should speak such nonsense.

To put Brewer into a proper frame of mind for witnessing psychic phenomena, Orville then told him the story about his presentiment that Wilbur would blow out the gas. "I'll blindfold myself," Orville went on, "and see if I can be guided by psychic means to whatever book that quotation is in." He tied his handkerchief over his eyes and began to grope along the rows of books in his library. When his hand touched the one he wanted, he said, "I feel a strong impulse to pick up this book."

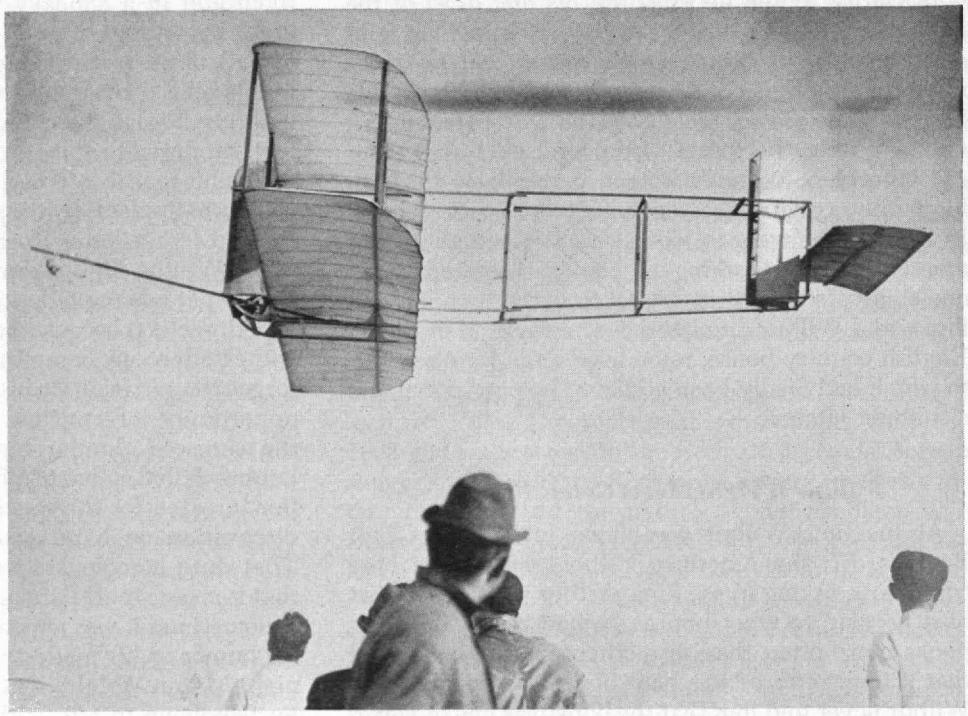
When Brewer recognized the volume which Orville had selected he said, "I don't think you'll find it there. The quotation doesn't sound like Milton."

"Let's take a look anyhow," suggested Orville; "there must be some reason for my impulse to pick it up." In a few moments of thumbing through the pages he had located the lines about invention. Naturally Brewer was amazed. He wondered about this feat all the rest of his life, for Orville thought the joke too good to spoil by explanation.

Thanksgiving Turkey

Once, as a minor prank, Orville prepared a turkey in a special way for a family dinner on Thanksgiving. Nearly all his nieces and nephews preferred dark meat and this time they were surprised that, as Uncle Orv carved, the supply never gave out. One of them remarked: "This is good turkey, but do you know it tastes a little like duck." Then Orville shook with laughter as he turned the platter around to show that the turkey was only a front. Most of the dark meat *was* duck.

Contrary to the common impression, Orville loved conversation. More than one of his friends has remarked that, no matter how late at night, he was never known to yawn and never seemed to be talked out. During World War II one of his grandnephews attending Miami University, not far from Dayton, persuaded him to come and spend an evening at a fraternity house. The other boys in the group wondered how they would talk to a man of his supposed taciturnity. They soon were quite at ease, because Orville promptly began to do most of the talking. One of the boys, taking a preliminary course in aviation, happened to mention something in his textbook that he didn't understand. Orville looked puzzled and asked to see the book. After reading a paragraph he said: "Oh, this is wrong," and wrote a correction in the margin. Then at the student's request he added his ini-



Rare historical photo showing one of the early Wright brothers' experiments with gliders prior to their famous flight at Kitty Hawk. Shown here is a group of persons watching a glider in flight shortly after the turn of the century.

Fotograms

tials. What those boys remember of that evening is not alone their contact with a keen mind, but the pleasure of having a charming, unassuming guest who contributed wonderful conversation.

Sometimes his part in a conversation was only a surprising remark. Some one in a group raised the question of the desirability of a nap after dinner. After much discussion all agreed with the accepted medical belief of the time that a nap right after eating is not good for one's health because more circulation of the blood is needed to aid digestion. Then came Orville's dead-pan comment: "If you are correct, think what a mistake dogs have been making!"

Persistently a bachelor, Orville liked to talk with women, provided they were married and accompanied by their husbands. He found disturbing an unattended woman who showed any interest in him. One woman gave him an alarming experience. The widow of a man he had known in Europe came for a short tour of the United States, and without much advance warning wired him that she would stop in Dayton to pay him a visit. Orville arranged to have one of his nieces at his home as hostess. He was much preoccupied, wondering how long the visitor planned to stay. She happened to remark that while in the United States she hoped to see Niagara Falls.

"Oh yes," spoke up Orville, "you mustn't miss Niagara Falls. It's not always easy, though, to get train reservations. Let me see what I can do," and he rushed to another room to telephone. When he returned, he said to his guest, "You are fortunate. I was able to engage you a berth on the train that leaves at four o'clock this afternoon."

Orville Wright Evaluates the Airplane

Orville was conservative in his estimate of the value of the airplane. At the time of the sesquicentennial anniversary of the founding of the United States Patent Office, he and a number of other scientists were asked to list the 10 inventions of the last 100 years they considered the most important. He took the word important to mean usefulness in the everyday life of an average person. His list of 10 inventions included the telegraph, the telephone, the air brake, the perfecting press, the Linotype machine, and radio – but *not* the airplane!

The trait in Orville Wright that always impressed me most during a third of a century of intimate acquaintance was his aim for accuracy and precision in all he did. Instinctively a perfectionist, he was tolerant of careless statements by others, but his own had to be right. In seeking more information about his childhood, I once said to him: "One Monday morning with your face freshly washed you set out for school for the first time. Can you remember what happened that day?"

He looked at me intently for a moment and replied: "I'm not absolutely sure it was on a Monday."

During the three years I worked closely with him, on the biography of the Wright brothers, there were many days when we got discouragingly little done. Once we put in 10 hours without any time off for lunch, and all we accomplished was to make sure of one date of minor importance. As we were leaving his office. I remarked that it had been a day of futility.

"Why do you say that?" he asked. "There's no longer any question about that date, is there?" He would have preferred to take a week to ascertain it rather than to risk authorizing a small misstatement.

His passion for accuracy was supported by an astounding memory. One evening I mentioned something I had written to him in a letter a year or so previously. He smiled and declared, "But I don't think that's quite what you wrote." Then he quoted precisely what I had written. It was nothing important and he had made no point of remembering it, but his mind had worked with its usual precision.

In his insistence on sticking to facts he could be stubborn. Near Dayton, on Wright Hill, which overlooks what was the Huffman Field where the Wrights made early experiments and later trained other flyers, there is a memorial monument and a bronze tablet on which are the names of all pilots who flew at Huffman. When the tablet was being prepared at Wright Field, Orville sent a list of names to go on it. The commanding officer, however, said they would omit the name of one man – Grover Cleveland Bergdoll – because he had become notorious as a draft evader in World War I, and the Army did not want to commemorate him. Orville pointed out that the tablet was intended to show the names of *all* the pilots and the list would be incomplete and inaccurate without Bergdoll's name; that his record as a draft evader did not change the fact that he had trained there as a pilot. The Army was unwilling to yield. Orville sent word that if Bergdoll's name did not go on, to omit also his own and Wilbur's! Then the Army gave in. Bergdoll's name is there.

I once asked Orville if there was any time during their experiments when he and Wilbur felt greatly discouraged. With characteristic clarity he replied: "When we discovered in 1901 that tables of air pressures prepared by our predecessors were not accurate or dependable, that was discouraging, in a way, and disappointing. For it meant that instead of starting from where others had left off, we must start from scratch. But, on the other hand, the fact that these data which others had considered accurate now turned out to be inaccurate, was interesting. One gets a certain thrill from discovering something others had not known. From one way of looking at it, you might even have called it encouraging, that the data others had used could not be relied upon. It suggested that maybe the reason others had failed to fly was not because the thing couldn't be done."

Perhaps the most interesting thing of all about Orville Wright was how little effect his distinction ever had upon his personality or his outlook. He had seen the Wright monument on top of Kill Devil Hill, ordered by Act of Congress, the most impressive memorial ever built to honor a person still living. But it seemed to interest him only as it did any other sightseer. He could not have been unaware that he and his brother were responsible for more revolutionary changes in the world than anyone since Columbus. Yet, except for being a little more retiring, he was still the same quiet, courteous, good-humored man who met customers at the Wright Cycle Company in Dayton 50 years ago.

FACTS AND FIGURES ON –

The White-Collar Worker

Unsung Symbol of the Process of Industrialization, Nonmanual Workers Are the Most Representative Unit of This Nation's Occupational Groups

By **PAUL MEADOWS**

EARLY in March of this year a retired industrialist, Joseph E. Uihlein, formerly head of the Schlitz Brewing Company, announced his personal plan to quit the directorship of a Milwaukee bank in order to devote the rest of his life to the unionization of American office workers. The United Press story indicated that he had already talked with American Federation of Labor leaders and had arranged similar conversations with Philip Murray of the Congress of Industrial Organizations.

This useful support from a totally unexpected source coincided neatly with announcements by national C.I.O. officials of intentions to invade the bailiwick of their lagging affiliate, the United Office and Professional Workers of America, which was accused of muffing the ball. National officers claim that they have been plagued with workers and local unions crying for affiliation. A.F. of L. officials have, since the close of World War II, also cast an appraising eye over the front offices of American business and industry and have drawn the lines of battle. Apparently the rather phenomenal experience with foreman unionism in the last five years has created serious doubts about the immunity of white-collar workers to union appeals.

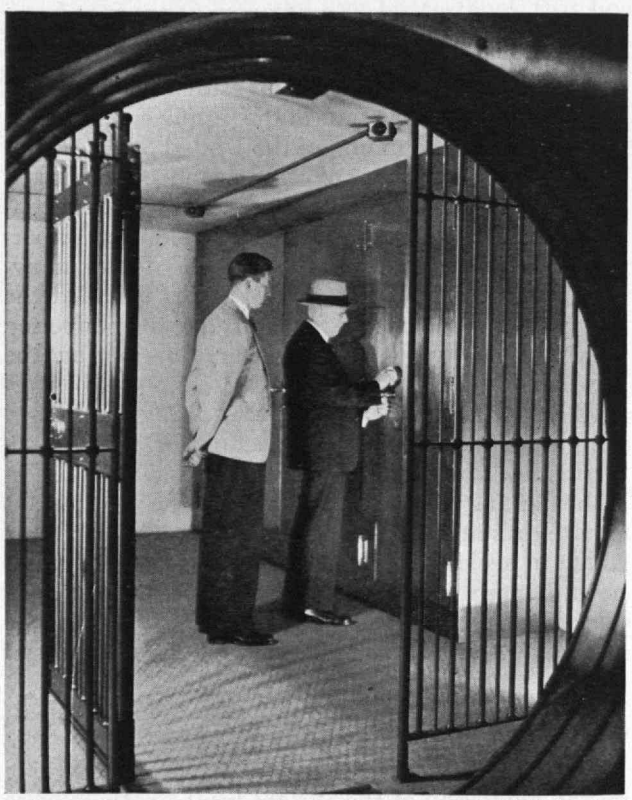
Unquestionably the union representative knocking at the very door of office management these days is not only being invited in but is receiving a friendly audience.

Who, then, are the white-collar workers? How many of them are there? What are the salient features of their economic existence in American industrialism? What is on their mind? Will they "go unionist"?

A Rising Labor Force

The word historians offer no help in reconstructing the origins of the term "white-collar workers." Webster simply identifies them as the class of salaried workers, office and mercantile, "whose duties permit or require a well-groomed appearance." The English phrase is "black-coated workers." The French speak of them as "*employés*," the Germans, as "*Angestellte und Beamten*." The Bureau of the Census designates a group of occupations, roughly equivalent to "white-collar," by the phrase "clerical, sales, and kindred workers"; 31 different occupations are thus classified. "The binding idea," as occupation specialists H. D. Anderson and P. E. Davidson[1] put it, is "that they serve or promote transactions and report or record such activity." Among the most important categories are bookkeepers, cashiers, accountants, office-machine operators, stenographers, typists, secretaries, salesmen and saleswomen, shipping and receiving clerks, telegraph and telephone operators, attendants and messengers. The 1940 census listed slightly more than 8,000,000 white-collar workers, so defined, in the United States labor force. They comprised about one-sixth of the entire working population.[2]

The International Labor Organization, using a more inclusive system of classification, in a report published in 1936 grouped semiprofessional and administrative technicians with clerical and kindred workers under the category of "non-manual workers." The estimates showed a percentage distribution for these workers among the major countries of the industrial West that



Harold M. Lambert

Conservatism and strength of numbers characterize more than 8,000,000 white-collar workers in the United States, including bookkeepers, cashiers, accountants, office-machine operators, sales personnel, and similar groups.

ranged from a low of 12 per cent, in the case of Italy, to a high of 30 per cent for the United States.[3]

The growth of this class of workers is mirrored in the various statistical indices. Alba M. Edwards of the Census Bureau, confining (in this instance) the term "white-collar" to clerical workers, noted that in the two generations following the Civil War their numerical increase was slightly over 2,000 per cent, a jump from 2.9 per cent of the total labor force in 1870 to 16.3 per cent in 1930.[4] The rate of increase as reported in the Census for 1910 and for 1930 showed an upward spiral of 107.7 per cent for the clerical, sales, and kindred worker group as against 27.9 per cent for the total labor force. They increased twice as fast during this period as skilled and semiskilled workers, and nine times as fast as proprietors and managers; unskilled workers showed a proportional loss of 1.7 per cent in these statistics.

During the depression decade of the 1930's this group of employees practically balanced their gains and losses, as compared to craftsmen, foremen, and laborers whose losses exceeded gains. The war years greatly strengthened their position in the national economy. During a time when the general civilian labor force increased 11 per cent, clericals (though not sales people) increased 45 per cent – a growth which for the same period very slightly bettered the record of operatives, craftsmen, and foremen.

The wartime experience lends support to the prediction made by Mr. Edwards 10 years[5] ago that "in future years, the white-collar workers probably are destined to outnumber every other larger social-economic group, except, possibly, that comprised of unskilled workers."

A New Industrial Worker

The onset of World War II closed an industrial development in which the white-collar class had grown faster than any other occupational group, except public service. Indeed, almost perceptibly a new industrial worker came to maturity! What factors explain this story?

It may, in part, be traced to the changes which took place in business management during this period.[6] These changes refer to the emergence of filing, recording, cost accounting, systems of reports and estimates, sales promotion, systems of incentive-wage payments, government reports, trade analyses, and so on. Of strategic importance was the rise of the large-scale corporation[7] with its "batteries of typists, squadrons of file clerks, platoons of bookkeepers, and lively skirmish lines of office boys and messengers." The logic of the white-collar development, then, is a familiar one: specialization of function, standardization of operation, economy of volume production.

A technological factor underlies the expansion and work conditions of the white-collar force. The invasion of the front office by typing, recording, and mathematical machines has produced a new type of machine operative. For the power revolution of industrialism has reoriented the routines of the office and sales room, just as it transformed those of the shop. Office-equipment industries, experiencing luxuriant growth, have supplied the same demands for machinery as those which prompted the assembly line and mass production. Office and sales management, moreover, has paralleled the rigid production schedules and managerial controls of the factory: piecework, salary-incentive systems, job analysis, time and motion studies, and quotas organize the work-day world of the white-collar worker. His work situation appears to have become, in point of fact, an industrial work situation.

Social changes likewise are responsible for the emergence of the white-collar class in the modern economy. Rising levels of public education have made available men and women with training and background necessary for the special functions of the office and salesroom; in like manner, the stream of housewives outbound from the home seeking employment in business and industry has supplied a needed labor force. Both of these social changes reflect the higher social status attached to office and sales occupations: attractive work conditions, shortened hours (acquired earlier and more universally and without effort by white-collar workers), and opportunities for advancement to management.

The white-collar worker, thus, is an unsung symbol and agent of the processes of industrialization. The International Labor Organization report cited previously[8] noted that what is there termed "the non-manual group" constitute "some 20 per cent of the gainfully employed, and the proportion tends to increase with the degree of industrialization."

A Personality Profile

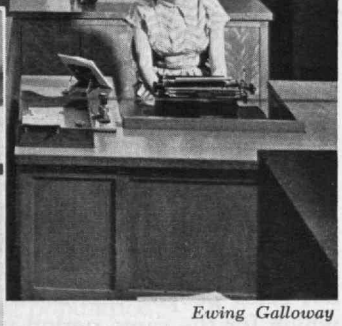
Historically, the industrial position of the white-collar worker has been that of a rapidly growing middle class[9] – "a class between the better-educated and better-paid professional workers and the less well-educated and less well-paid manual workers." There is some evidence, to be noted subsequently, that his hold on this status is becoming tenuous. However that may prove to be, his proletarian middle-class role, so to speak, merits attention. What does the white-collar worker look like, socially and intellectually?

He is predominantly white (98.8 per cent). He is relatively young: three out of four white-collar workers are less than 45 years old. The sex ratio among this group is slightly overbalanced in favor of the males (53.2 per cent). He is largely urban (83 per cent). He is less subject to unemployment than the manual worker: five times as many of the latter were reported in the 1940 Census as employed on public emergency works. Among the males, one-third were listed as single in the last Census; among the females, a little over one-half. Educationally, there is some evidence that the median number of years of schooling exceeds that of the national average of 8.8 years.[10] Socially, indeed, there is little in his record which would belie the title of proletarian middle-class man, except probably his income data.

This impression is greatly strengthened by an examination of the opinion polls reported during the last eight years.[11] In 32 national polls calling for "yes-no" or "approve-disapprove" answers, American white-collar workers come closer to the national answers than any other group. Their percentage de-

A technological factor underlies the expansion and work conditions of the white-collar force. The invasion of the front office by typing, recording, and mathematical machines has produced a new type of machine operative. Office and sales management, moreover, has paralleled the rigid production schedules and managerial controls of the factory.

A. F. Sozio from Gendreau



Ewing Galloway

What does the white-collar worker look like, socially and intellectually? He is predominantly white. He is relatively young: three out of four white-collar workers are less than 45 years old. The sex ratio among this group is slightly overbalanced in favor of the males. He is largely urban. He is less subject to unemployment than the manual worker.

viations from the national average was 3.7 per cent, as against 5.5 per cent for the manual workers, 6.4 per cent for the business and professional, and 10.2 per cent for the farm group. It is not too much to say that the white-collar workers seem to be the most representative occupational group in America, so far as central tendencies on national issues are concerned. The relative lack of organization and of opinion-forming agencies among them is the most obvious reason for this fact.

White-collar reactions to Gallup poll takers (the American Institute of Public Opinion is the only poll that has consistently made an occupational breakdown of answers) are of course most definite to questions involving their occupational security or interests. A typical instance was the manner in which 58 per cent of white-collar employees (this was the highest figure for any occupational group) indicated in December, 1945, approval of a proposal that wages and salaries of civil service workers in Federal government should be raised 20 per cent.

Some of their replies are enlightening indices of their thinking. Thus, they varied in their support of the Roosevelt administrations from 51 per cent in 1936 to 45 per cent in 1946; but when asked in 1940 with which political party they identified themselves, only 36 per cent of them said Democratic. Asked in August, 1947, whether they would rather work for the Federal government, or for a private firm, 36 per cent checked the former, 39 per cent the latter. A poll taken that same month showed that over half (55 per cent) of them favored more taxes for scientific and military research. Three-quarters of them in September, 1946, favored a balanced budget (as against cutting income taxes). At the close of World War II, four out of five asked for active governmental postwar planning. In favor of government leadership in American-problem solving, nevertheless they seem to have made no particular effort to influence congressional action: 83 per cent told Gallup pollsters in June, 1946, that they had never written or wired a congressman or senator. About two-thirds of them would like to own their own business, as against a similar preference of 81 per cent for professional and business people, 80 per cent for farmers, and 61 per cent for manual workers.

(*Continued on page 522*)

THE CENTENNIAL OF 1876 – High Tide of Confidence

As the United States Faced the Future with Pride, 10 Decades of National Progress Were Commemorated in Philadelphia

By **E. H. CAMERON**

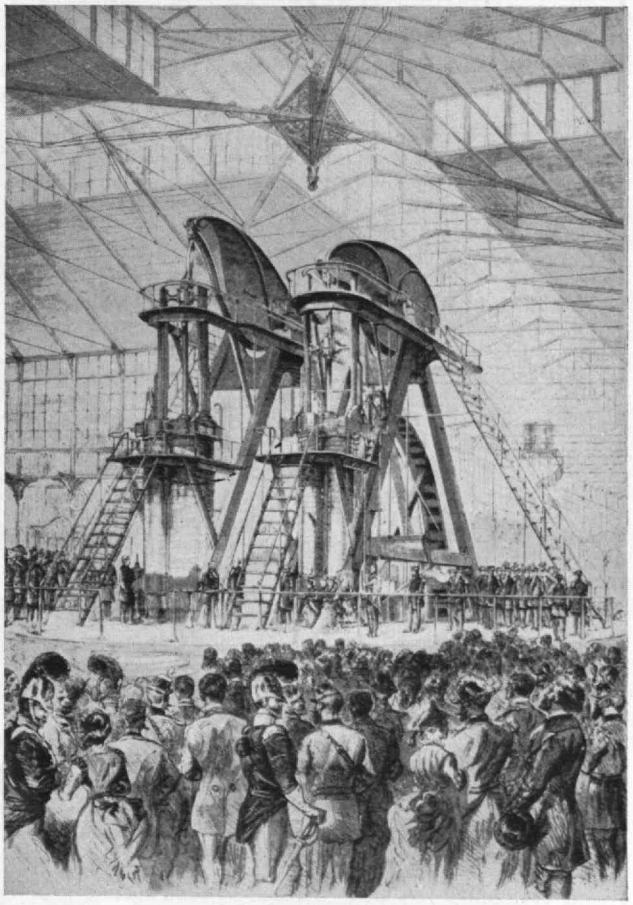
PART I

In the contemporary record of the good year 1876, as revealed by the books and periodicals of that year, one inspiring strain stands forth: a radiant confidence in the success of America. The expression of this high spirit is unrestrained – grandfather bragged prodigiously as to what he had done and what he planned to do next. His sturdy conceit is easy to forgive, however, when a study is made of the amazing examples of his industry and courage which the record describes. Even the severe financial panic of 1873 had been unable to break this splendid quality of faith that was to be displayed in the Centennial Exposition at Philadelphia three years later. Events seem to have justified this belief in America's destiny of success unlimited, in the Centennial year.

In its recent Civil War had not the strong, young nation solved its internal difficulties in such rugged fashion that hitherto hostile Europeans had promptly revised their attitude of superiority? In contrast, the ensuing eagerness to show their respect for American strength was a little comical. Great Britain had acknowledged its errors by concessions in the Alabama claims. France had sacrificed its sponsored Mexican Emperor, Maximilian, that the United States be not further offended by the grandiose imperialism of the French Emperor, Napoleon III. Gambling shrewdly, Russia had given the implied support of its fleet in the Civil War, and the payment for this grand gesture had been included in the $7,200,000 which America had paid for the supposedly useless terrain of frigid Alaska, in 1867, two years after the war's end. Even before the Civil War, imitative Japan had sent an embassy to learn the ways of the fantastically successful young democracy whose borders touched the Atlantic as well as the Pacific Ocean. As a sound background for the spirit of American assurance, there was a growing realization of the vast extent of the country's natural resources, now made readily accessible by the completion of the transcontinental railroad.

Fortuitously, this ascendancy of American spirit coincided with the nation's 100th birthday. The year 1876 was, therefore, selected as a suitable occasion for a world's fair to be held in Philadelphia where the Declaration of Independence had been signed a century earlier. The Philadelphia Centennial World's Fair was planned as one that should excel the six international exhibitions which had occurred during the preceding quarter-century. That the Centennial Exposition would fulfill its aims and surpass all others seemed assured by the enthusiasm of the vast throngs on the day of the opening ceremonies.

The great German composer, Richard Wagner, had written "The Centennial March" for the opening of the Philadelphia Exposition. To this gesture of international good will were added appropriate symbols of North-South reconciliations as a hymn by Massachusetts' John Greenleaf Whittier, and a cantata by Georgia's Sidney Lanier, were featured in the opening program. But even on the opening day, emphasis was on the practical, utilitarian aspects of life, as



Harper's Weekly

President Grant and Emperor Dom Pedro start the 2,500-horsepower Corliss engine which actuated machinery in the Philadelphia Centennial Exposition in 1876. Corliss was the only manufacturer who dared bid on the invitation to supply so much power.

PROGRESS DURING THE FIRST CENTURY OF THE UNITED STATES OF AMERICA*

DECADE 1 — 1776–1785

The Revolutionary War. • Several ironmasters sign Declaration of Independence. • British burn ironworks at Valley Forge. • Blast furnaces in several Colonies produce cannon and cannon balls. • Some brass cannon manufactured. • Period in which gunsmiths were busy. • First submarine, used in war, built by David Bushnell. • Corps of Engineers, United States Army established. • James Watt patents double-acting steam engine and other important engine devices.

DECADE 2 — 1786–1795

Adoption of United States Constitution. • The first United States Census. • United States Patent Office established. • Eli Whitney invents cotton gin. • Samuel Slater builds first Arkwright cotton machinery in the United States at Pawtucket, R.I. • A breech-loading, flint carbine produced. • First canal in United States built at South Hadley Falls.

DECADE 3 — 1796–1805

Louisiana Purchase. • Lewis and Clark Expedition. • Findley builds the first iron suspension bridge in America at Jacobs Creek, Pa. • John Fitch experiments with screw propeller in New York. • Cast-iron mouldboard plough patented. • The first Fourdrinier papermaking machine turned out. • Library of Congress founded.

DECADE 4 — 1806–1815

War of 1812. • Robert Fulton's steamboat, the *Clermont*, marks the beginning of successful steam navigation. • The first steam ferry boat, designed by John Stevens. • Thomas Pope exhibits model of a wooden arch, of 1600 feet span, across the East River, at site of Brooklyn Bridge. • Patent for splitting leather obtained, greatly increasing production of leather goods. • Steam power successful — used to operate spinning machinery.

DECADE 5 — 1816–1825

Era of Good Feeling. • The Erie Canal built. • Famous crossing of the Atlantic by the *Savannah*, a pioneer attempt, using steam only 80 hours of the 27-day passage (Savannah to Liverpool). • Building of the National Road across Allegheny Mountains to the Ohio River. • First gas company in the United States was incorporated in Baltimore, Md.

DECADE 6 — 1826–1835

Genesis of the American railroad system: Quincy, Mass. — a gravity cable line to bring granite from quarry for Bunker Hill Monument. • At Carbondale, Honesdale, and Mauch Chunk, Pa., cars pulled by gravity or by stationary engines. • The *Tom Thumb* and the *Stourbridge Lion*, operate under their own power. • Beginning of the following present railroads: Baltimore and Ohio; Pennsylvania; New York Central; New York, New Haven and Hartford; Boston and Maine. • Cyrus McCormick patents his first reaper. • Joseph Henry develops the electromagnet. • The friction match invented. • Power printing presses put to use and type composing machine invented by William Church.

DECADE 7 — 1836–1845

Charles Goodyear's discovery of the process of the vulcanization of rubber. • Each using steam throughout the voyage, the *Sirius* and *Great Western* cross Atlantic simultaneously, marking the beginning of transatlantic steam navigation. • Samuel Morse builds the first telegraph line, between Baltimore and Washington. • Bunker Hill Monument completed. • Charles Ellet builds the Fairmount suspension bridge over Schuylkill River. • British patent granted for the first incandescent lamp. • First steam shovel invented by William S. Otis. • Beginnings of photography.

DECADE 8 — 1846–1855

The Mexican War. • Founding of: The Smithsonian Institution; Boston Society of Civil Engineers; American Society of Civil Engineers; American Association for the Advancement of Science. • Gold discovered in California. • The Corliss engine patented. • The sewing machine patented by Elias Howe. • The Otis power elevator exhibited in New York. • John Roebling's Niagara Falls suspension bridge opened to rail traffic. • Bessemer patent for making steel granted, while William Kelly develops similar process. • Construction of Hadley Falls Dam at Holyoke, Mass.

DECADE 9 — 1856–1865

The Civil War. • The first Atlantic cable laid, but soon fails. • Edwin Drake drills first commercial well for petroleum at Titusville, Pa. • Battle of *Monitor* and *Merrimac* marks the end of wooden battleships. • Siemans patent for the regenerative furnace on which open-hearth steel depends. • Many military inventions. • Maiden voyage of the *Great Eastern*, the first "leviathan," an iron ship propelled by screw propeller, paddle wheels, and sails. • Passage of the Homestead Act, stimulating emigration to the Great West. • Charter granted to Massachusetts Institute of Technology.

DECADE 10 — 1866–1875

Purchase of Alaska from Russia. • Establishment of the United States Weather Bureau. • The Atlantic cable successfully laid by the Great Eastern. • Completion of the Pacific Railroad, the first transcontinental line. • James Eads undertakes the improvement of the mouth of the Mississippi River. • Completion of the Eads Bridge at St. Louis. • Foundations and anchors completed and start of cable spinning for the Brooklyn Bridge. • Alexander Bell, on his 29th birthday, receives patent No. 174,465 for the telephone, called the most valuable single patent ever issued. • Thomas Edison (also 29 in 1876) had invented a vote recorder, a printing stock ticker, and other devices. Established at Menlo Park in 1876, he invented the carbon transmitter for Bell's telephone and started to develop automatic telegraphy, the mimeograph, the phonograph, and to improve the typewriter into a practical machine. • George Westinghouse invents air brake. • First commercially successful open-hearth steel plant in America starts construction.

* Every item in this table has been checked against one or more reputable authorities. Since authorities sometimes disagree in establishing dates, the reader will understand why there may be some uncertainty in establishing "first" events. Events listed are not restricted to activities in the United States.

Leslie's Historical Register

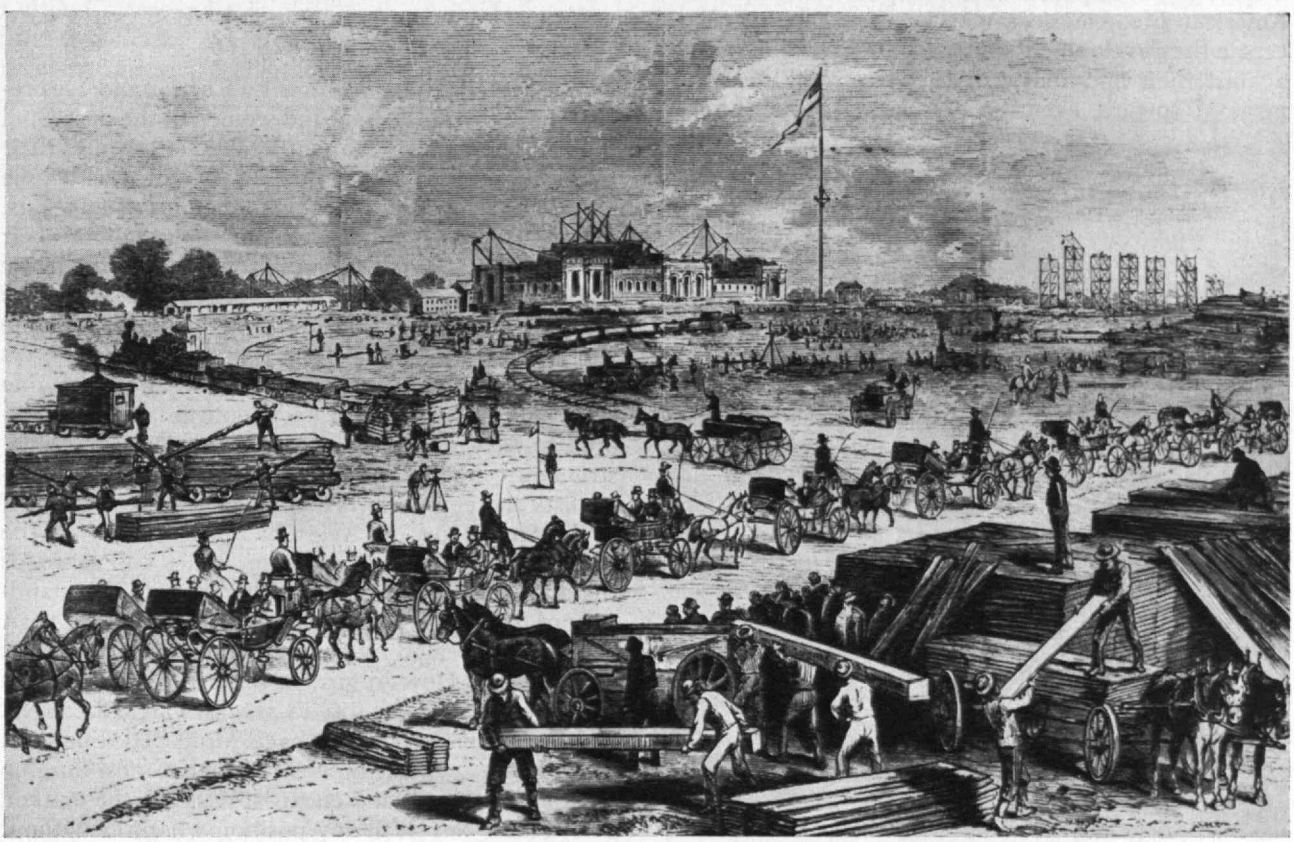
Streetcar accommodations during the Philadelphia Exposition of 1876. Perhaps there are 200 persons on this two-horse streetcar; the horses, therefore, are pulling about 15 tons along the iron rails. It is evident that the two horses in the picture are not happy, and New York observers might call the abuse to the attention of the new Society for the Prevention of Cruelty to Animals, chartered in New York, 10 years previously.

might be expected from a people living in a vast country with large areas still to be developed. Invention, and the science of the period played a major role in the Exposition which, among other things, served to document 10 decades of national existence.

Hero of the day was George H. Corliss, American engineer and designer, and builder of the huge steam engine which was to supply power for the Philadelphia exhibits. Officially, the Exposition opened when Ulysses S. Grant, President of the United States, assisted by Dom Pedro, Emperor of Brazil, turned the crank-handled valves to admit steam to the great Corliss engine. Addressing both of these statesmen, Mr. Corliss merely said: "Are you both ready? Then your Majesty will turn that handle. Now, Mr. President, yours." As President Grant operated the second valve, the huge engine began turning shafting exceeding a mile in length, and thus brought to dynamic life the numerous machines of the Centennial Exposition.

Perhaps it is true that science and invention flourish best in the democratic atmosphere. Certainly the 10 decades from the invention of David Bushnell's first submarine to be used in war, in 1776, to the thrilling demonstration of the vaguely psychic device which its bearded young inventor, Alexander Graham Bell, called the telephone, had been a century prolific in American invention. It was the century of the industrial revolution brought about through invention. The Centennial Exposition itself ushered in a new era of communication when Bell talked to the Brazilian Emperor, Dom Pedro, over a wire at the Exposition.[1]

[1] Bell's account of this momentous incident is recorded in the following words: "I heard afterward . . . that the Emperor held it up in a very indifferent way to his ear, and then suddenly started and said 'My god! it speaks!' . . . Suddenly I heard a noise of people stamping along very heavily, approaching, and there was Dom Pedro, rushing along at a very un-Emperor-like gait, followed by Sir William Thomson and a number of others, to see what I was doing at the other end." *Book of Wonders*, 1916.



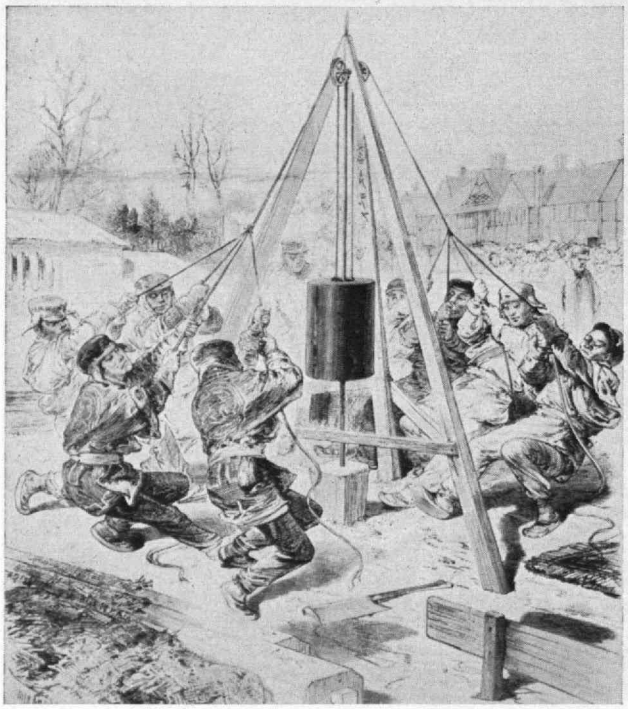
Leslie's Historical Register

New York and New England merchants visit the Centennial during construction. This lively construction scene could be modern, except that no steam shovels, no bulldozers, and no trucks are evident, and we might wonder about the horse-drawn carriages and the two laborers who carry a 1,000-pound timber with ease.

Leslie's Historical Register

Architects of the Centennial Buildings. With the deletion of the gas chandelier and a few whiskers, this becomes a modern drafting-room scene.

Novel ideas, Gargantuan exhibits, and vast areas of display at the Exposition made a profound impact on American life. American men measured the past success in the development of the resources of the country against their apparently unlimited extent, and were inspired toward even greater successes. Historians agree; the Centennial Exposition of 1876 was an outstanding landmark in the story of American progress.



Leslie's Historical Register

Japanese workmen lay the foundation for the Japanese Building. By one account, the appropriation of Japan for the Exposition greatly exceeded that of any other foreign nation.

Spirit of (18)76

The contemporary pictures by Currier and Ives reveal the styles of the men and women of the post-Civil War era; how they got about by land or sea, and their interests. Socially and politically this era was a time of strong contrasts. While the famous evangelists, Moody and Sankey, helped pious thousands by their sincere eloquence in words and song, there were many spiritualistic mediums, who played on the yearnings of those who had lost sons or husbands in the terrible war but recently ended. The northern carpetbaggers and southern scalawags hindered the efforts of able statesmen of both North and South as they endeavored to solve the heartbreaking problems of reconstruction, engendered by the war. Brilliant industrialists and engineers, who planned the development of the American Great West, had to compete with the dishonest promoters of phantom mines and railroads that would never operate. Peculiar, also, by the standards of today, were the styles of the Centennial year. These are revealed by contemporary advertisements.

"Whiskers! How to grow a thick and heavy Beard on the smoothest face in six weeks. Particulars free. Southwestern Agency, Carthage, Mo."[2] "The Standard Lotta Bustle . . . the lightest, strongest, most durable comfortable elastic and cheapest bustle in the market. The wearer can sit in any position whatever without bending or injuring it in the slightest degree, it clos-

(*Continued on page 530*)

[2] Advertisement in *Harper's Weekly*, 1873.

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Alumni Day, 1949

SATURDAY, June 11, has been designated as Alumni Day, 1949, when former students will return to Cambridge to participate in a program of events at M.I.T. This year's agenda will differ somewhat from that of previous years in eliminating the symposium because of the extensive program of scholarly papers which was presented during the Convocation. But otherwise the day's events, including the popular Stein-on-the-Table Banquet, will be in keeping with tradition.

In the morning, groups will visit Faculty members or take part in organized tours which will include the new supersonic wind tunnel, the 350-million electron-volt synchrotron, the Gas Turbine Laboratory, and the exhibition of modern aircraft and automotive engines in the Sloan Automotive Laboratory. Motion pictures of "M.I.T. in Action" and of the Convocation and Inauguration will be shown. Visitors will also have opportunity to see new construction going up (or recently completed), including the Rockwell Athletic Cage, the Charles Hayden Memorial Library, and the Eastgate apartment building. At noon, there will be the traditional open-air alumni luncheon in Du Pont Court.

During the afternoon, visitors will have opportunity to attend a tea and take part in the formal opening of the new Senior House. Dr. and Mrs. Compton and President and Mrs. Killian will receive at the tea.

Classes will convene for informal gatherings at the Hotel Statler, between 5:30 and 6:30 P.M., prior to the famed annual Alumni Banquet. At the traditional Stein-on-the-Table Banquet, Alumni will be privileged to hear addresses by Karl T. Compton, chairman of the Corporation, and President Killian.

To Office

BALLOTS, on which members of the Alumni Association voted for new officers to serve for the coming year, were closed on April 25. Tabulation of results showed that 2,763 ballots were properly cast, resulting in the election of: C. Adrian Sawyer, Jr., '02, as President of the M.I.T. Alumni Association for one year; Horatio L. Bond, '23, Vice-president for two years; and Philip E. Morrill, '14, and Parke D. Appel, '22, to serve on the Executive Committee, each for a two-year term.

Also elected as term members on the Corporation for five-year terms were: Rudolf F. Haffenreffer, '95, Robert T. Haslam, '11, and George J. Leness, '26. Luis de Florez, '11, was also elected to serve as term member on the Corporation to fill the vacancy of the late Albert J. Browning, '22.

Ballots for the National Nominating Committee showed that the following men were elected: *District 1* — H. B. Richmond, '14; *District 2* — Harold C. Pearson, '23; *District 4* — Donald B. Webster, '16; *District 5* — Winfield I. McNeill, '17.

Class Reunions

The following information is the latest which has been received from class secretaries and reunion chairmen concerning reunion plans and get-togethers which are to be held in 1949.

1884 June 11, Alumni Day. 65th anniversary. Luncheon in Du Pont Court.

1893 June 9. Annual meeting and luncheon at Engineers Club, 96 Beacon Street, Boston.

1894 June 10 and 11. June 10 at Braeburn Country Club, Newton; June 11, special Class table at Alumni Day luncheon, Du Pont Court. Details in Class letter.

1899 June 9–11. 50th reunion. June 9, luncheon, The Country Club, Brookline; dinner, Hotel Sheraton, Boston. Participation in commencement activities. June 11, special Class table at Alumni Day luncheon, Du Pont Court.

1903 Informal reunion in Boston vicinity.

1904 June 24–26, East Bay Lodge, Osterville, Mass. Carle R. Hayward and Eugene H. Russell, Jr., in charge of plans.

1907 June 24–26, Oyster Harbors Club, Osterville. From Friday afternoon until Sunday afternoon.

1909 June 17–19. Friday afternoon through Sunday. East Bay Lodge, Osterville. Accommodations available for anyone who wishes to come earlier or stay later.

1912 June 10–12. New Ocean House, Swampscott, Mass. Albion R. Davis in charge.

1914 June 17–19, Sheldon House, Pine Orchard, Conn. Reunion chairman, Charles P. Fiske.

1919 June 24–26, Norwich Inn, Norwich, Conn. Reunion chairman, Wilfred O. Langille, Diehl Manufacturing Company, Somerville, N.J.

1924 June 8–11, East Bay Lodge, Osterville. George E. Parker, reunion chairman.

1929 June 12–14, Sunday afternoon to Tuesday morning. East Bay Lodge, Osterville. John J. Wilson, Jr., chairman, 255 Beacon Street, Apartment 54, Boston 16.

1934 June 9–11, Ye Castle Inn, Cornfield Point, Saybrook, Conn. June 9, informal supper; June 10, Class banquet; June 11, program ends after breakfast.

1939 June 17 and 18, Mayflower Hotel, Plymouth. Frederick B. Grant, 22 Edmunds Road, Wellesley Hills 82, Mass., in charge of plans.

1944–2 June 10, The Graduate House, M.I.T., Cambridge. Dinner in the Campus Room. Malcolm G. Kispert, Room 3-208, M.I.T., in charge of plans.

1944–10 June 10, Hotel Sheraton, Boston. Dinner in private dining room. James B. Angell, M.I.T. Graduate House, in charge of plans.

Please consult your class secretary for more detailed information which may be available.

Stratton Appointed Provost

JULIUS A. STRATTON, '23, Professor of Physics and Director of the Research Laboratory of Electronics, has been appointed provost of the Institute. The academic post of provost is a new one at M.I.T., and Dr. Stratton, whose appointment became effective on April 15, will share with the president and the deans the administrative direction of the Institute's educational program. In announcing the appointment of Dr. Stratton, President Killian said:

The Corporation and my associates in the Institute's administration feel that Professor Stratton is ideally qualified for educational administration. His background both in electrical engineering and in physics, his brilliant direction of the Research Laboratory of Electronics, and his membership on the Institute's Committee on Educational Survey have provided him with an extraordinarily rich background for his new responsibilities. To all of his many assignments at the Institute he has brought a depth of understanding of education and of research which will be of inestimable value to our over-all program. I am personally delighted and reassured to have him as an administrative colleague and to have available his wise and judicial counsel in discharging my own duties as president.

Dr. Stratton's primary concern will be the administration of educational activities which do not fall within the jurisdiction of any single school, and the co-ordination, in concert with the deans, of interschool educational and research activities.

The officers of the Institute who report to the provost are the director of the Division of Industrial Cooperation, the registrar, the director of Admissions, and the director of the Summer Session. The provost will also have the responsibility for co-ordinating the programs of the large interdepartmental laboratories, which break across the lines of both departments and schools.

In 1919 Dr. Stratton entered the University of Washington, transferring a year later to M.I.T. from which he received the degree of bachelor of science in 1923 and his master's degree in science in 1926. In 1927 he was awarded the degree of doctor of science from the Technische Hochschule in Zurich. For the next year he studied in Europe under a traveling fellowship from M.I.T., principally at the universities of Munich and Leipzig.

In 1924 he was appointed a research assistant and in 1928 he was made an assistant professor in the Department of Electrical Engineering. He transferred to the Department of Physics in 1930. In 1935, he was promoted to the rank of associate professor of physics, and became a full professor in 1941.

From 1940 to 1945 Dr. Stratton was a member of the staff of the Radiation Laboratory at the Institute. During World War II he was also an expert consultant in the office of the Secretary of War. It was for his outstanding services there that Dr. Stratton was awarded the Medal for Merit from the Secretary of War in 1946.

Upon his return to M.I.T. in 1944, Dr. Stratton was active in the organization of the Research Laboratory of Electronics of which he became director that same year. He served from 1946 until January, 1949, as chairman of the Committee on Electronics of the Joint Research and Development Board.

Sound Advice

IN the absence of President Dandrow, John A. Lunn, '17, Vice-president of the Alumni Association, presided at the 268th meeting of the Alumni Council which was held at the Graduate House on April 25.

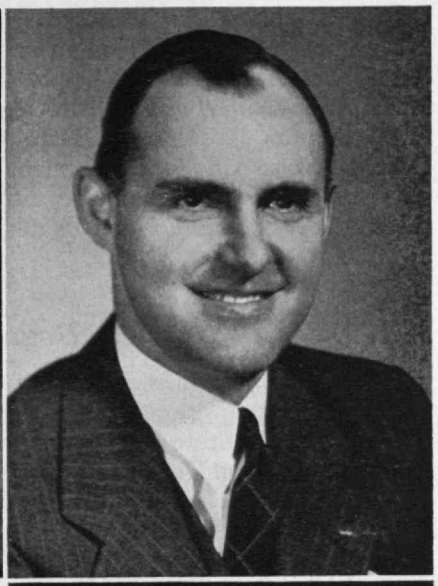
During the business portion of the meeting it was reported that nine members of the Institute staff had visited 14 clubs between March 2 and April 25. Henry B. Kane, '24, Director of the Alumni Fund, reported that the ninth year of the Fund had closed on March 31 with a total of $152,502.07 contributed by 9,963 Alumni – representing an increase of about 200 contributors over the previous year.

Malcolm G. Kispert, 2–44, was then called upon to present a report from the President's Office on current developments at M.I.T. His remarks were concerned primarily with the beneficial results which followed the Convocation and Inauguration as reported in the May issue of The Review. Mr. Kispert also read a statement prepared by President Killian (as published on page 432 of the May issue of The Review) on Institute policy on matters of academic freedom.

Mr. Lunn then introduced Professor Richard H. Bolt, Director of the Acoustics Laboratory, who discussed recent problems and developments in the field of acoustics. His talk, which was illustrated with slides, gave particular emphasis to work being done at the Institute on the topics of studio design and construction, studies in aircraft acoustics, research on chemical and physical properties of such substances as rubber, and the development of new building materials, such as concrete blocks and wall panels.

M.I.T. Photo

Julius A. Stratton, '23
Provost of the Institute



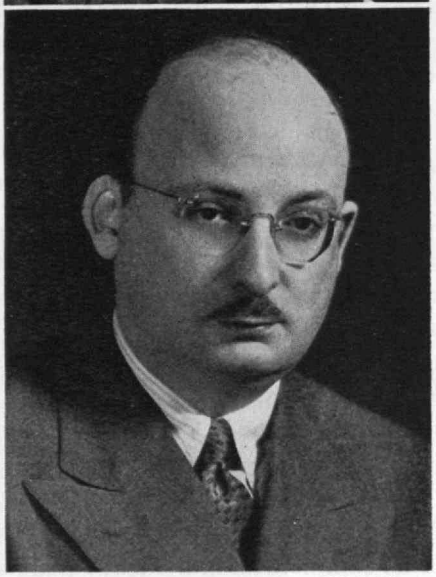
Norman Levinson, '33
Professor of Mathematics

Gyorgy Kepes
Professor of Visual Design
(top left)

Charles A. Myers
Professor of Industrial Relations
(top right)

Samuel C. Collins
Professor of Mechanical Engineering

Eric Reissner, '38
Professor of Mathematics



M.I.T. Photos

Achievement Recognized

PROMOTIONS on the Faculty of M.I.T., as announced in April by James R. Killian, Jr., '26, President of the Institute, included 5 to the position of professor, 10 to associate professor, 18 to assistant professor, and 17 to instructor in the annual list of advancements of the Institute's Faculty.

Advanced to the rank of full professor were: Gyorgy Kepes, School of Architecture; Charles A. Myers, Department of Economics and Social Science; Norman Levinson, '33, and Eric Reissner, '38, Department of Mathematics; and Samuel C. Collins, Department of Mechanical Engineering.

Assistant professors who have been promoted to the rank of associate professor were: Robert C. Seamans, Jr., '42, Department of Aeronautical Engineering; Harold S. Mickley, 2–46, Department of Chemical Engineering; John C. Sheehan, Department of Chemistry; James W. Daily, Department of Civil and Sanitary Engineering; Elting E. Morison, Department of English and History; Milton C. Shaw, and Joseph Kaye, '34, Department of Mechanical Engineering; and George E. Valley, Jr., '35, Sanborn C. Brown, 10–44, and Martin Deutsch, '37, Department of Physics.

Promotions to the rank of assistant professor were: Michael Witunski, '43, and Dominic Amara, 9–46, Department of Aeronautical Engineering; John J. Mealy, Director of the Bangor Station, School of Chemical Engineering Practice; David A. Trageser, 6–45, Director of the Buffalo Station, School of Chemical Engineering Practice; Kevin A. Lynch, '47, Department of City and Regional Planning; Thomas W. Lambe, '44 and J. Melvin Biggs, '41, the Department of Civil and Sanitary Engineering; George P. Shultz, Department of Economics and Social Science; George C. Newton, Jr., '41, Samuel J. Mason, '47, Wilbur B. Davenport, Jr., '43, John G. Linvill, '43, and William K. Linvill, 6–45, Department of Electrical Engineering; Theodore Wood, Jr., and David A. Dudley, Department of English and History; Kenneth R. Wadleigh, '43, Department of Mechanical Engineering; Maurice E. Shank, Department of Metallurgy; and Abdul J. Abdullah, 6–46, Department of Meteorology.

Members of the staff to become instructors are: Albert J. O'Neill, '32, Dimitrios (James) A. Polychrone, '47, and Thomas A. Hood, 6–45, Department of Building Engineering and Construction; Raymond F. Baddour, Assistant Director, Oak Ridge Engineering Practice School; Harl P. Alrich, Jr., '47, Department of

Civil and Sanitary Engineering; George B. Baldwin, 2–44, Department of Economics and Social Science; John C. Löf, '41, David C. Whipple, Joseph K. Dillard, Monir A. Kashmiry, Richard B. Adler, '43, Carroll E. Frank, Vinton B. Haas, Jr., Harold M. Lucal, and Denis U. Noiseux, 9–46, Department of Electrical Engineering; Richard B. Palme, Department of Mechanical Engineering; and Eugene S. Pulk, '43, Department of Meteorology.

M.I.T. to Award New Degree

FOR practicing engineers a new terminal degree, to be called the "Engineer" degree, has been approved at the Institute and is expected to be awarded for the first time at Technology's commencement this June, according to John W. M. Bunker, Dean of the Graduate School. The degree "Engineer," with the field of specialization designated, will require about two years' study following a bachelor's degree in any one of the Institute's various engineering departments. Said Dean Bunker:

> The new degree fills an educational need for the development of professional engineering competence at a higher level than is ordinarily represented by the master of science degree.
>
> The expansion of scientific knowledge which can be applied in several areas of engineering practice has been so extensive that a specialist in any one field needs to achieve more than casual acquaintance with related fields if he is to render the most effective service in engineering.
>
> With the establishment of the Engineer degree as a terminal degree for those who will practice engineering, the Ph.D. and Sc.D. degrees will continue to be the objective for those who have interest in and aptitude for original, creative research.

The new degree will be recommended for students who complete an individually planned, two-year program of study and research at the Institute beyond their undergraduate degrees. Emphasis will be placed upon engineering practice, rather than on the research which is characteristic of a program of study leading to a Ph.D. degree.

Most candidates for the master's degree at the Institute require slightly more than one year of study to complete their work; candidates for the new degree, Engineer, will require at least two years at the Institute. This added time will result in more thorough training in a wider variety of relevant subjects, and also will enable students to delve more extensively into such fields as industrial economics, business administration, labor relations, and international affairs, thus improving their understanding of the social implications of the work in which they will be engaged.

When the field of specialization is to be indicated, the Engineer degree will be referred to as follows: Civil Engineer, Mechanical Engineer, Metallurgical Engineer, Electrical Engineer, Chemical Engineer, Sanitary Engineer, Marine Mechanical Engineer, Naval Architect, Naval Engineer, Aeronautical Engineer, Building Engineer, and Meteorologist.

The new degree will be conferred for the first time at the June, 1949, commencement exercises when three dozen candidates will become Engineers.

Toward Broader Engineering Training

POMONA College of California and Wesleyan University in Connecticut have joined the Institute's plan offering a combined course of study in the liberal arts and in technology, President Killian recently announced. The combined plan of study now includes 14 liberal arts colleges, all of which cooperate with M.I.T., under a plan jointly established in 1936, in organizing an effective combination of liberal arts and specialized technological training at the undergraduate level. Such a program provides a broadened training for those whose major interest may be in the fields of science, architecture, or engineering.

Under the arrangement, students of high academic standing may pursue a specially planned course for three years in any of the participating liberal arts colleges and then complete the requirements for a science, engineering, or city planning degree in two years at the Institute. A degree in architecture requires three years' additional study at M.I.T. Both a B.S. degree from the Institute and a B.A. degree from the liberal arts college are awarded on completion of the program. In announcing the additional acceptances, Dr. Killian said:

> Many prospective students of engineering, science, architecture, or city planning wish to attend a liberal arts college before undertaking their professional training. The combined plan is designed to make this possible without the time and expense which would be required if two entirely independent curricula were to be followed.
>
> At least one year of time is saved in the combined plan of study, and the degrees of both institutions and the broadening advantages of residence in both are secured. This combined plan is a fine demonstration of collaboration among colleges and of combining liberal arts with technological education.
>
> The background contributed by liberal arts colleges is of great help to the Institute in meeting its responsibilities for its students' effectiveness as individuals and citizens as well as their technological competence.
>
> We are gratified to have this program of combined studies extended to two additional colleges, and we are confident of their contributions through this cooperative plan.

Other colleges participating in the combined plan include: Amherst College, Amherst, Mass.; Bowdoin College, Brunswick, Maine; Miami University, Oxford, Ohio; Middlebury College, Middlebury, Vt.; Ohio Wesleyan University, Delaware, Ohio; Reed College, Portland, Ore.; Ripon College, Ripon, Wis.; St. Lawrence University, Canton, N.Y.; Washington and Jefferson College, Washington, Pa.; College of William and Mary, Williamsburg, Va.; Williams College, Williamstown, Mass.; and College of Wooster, Wooster, Ohio.

Since the combined plan of study has been in effect, 56 students have been graduated from M.I.T. under its provisions, according to Professor B. Alden Thresher, '20, Director of Admissions at the Institute. There are now 63 students at M.I.T. under the combined plan, 34 of whom entered last fall. About 75 are expected to enter the Institute in the fall of 1949, Professor Thresher said.

(*Continued on page 520*)

To our Colleagues in American Business . . .

There are many common objects which we all see almost daily. Because they are so familiar we take it for granted that they have reached final perfection. Frequently, however, this is far from being the case. An example can be found in the 2½ gallon fire extinguisher, found for years in almost every factory, school, and office. Countless fires have been put out with it, and lives, buildings, jobs, money saved. Some time ago an important maker of this type of bottom-up extinguisher decided that the latest technological developments should be put to work in both the production and design of this important device. To this end, a complete restudy of possible machines, manufacturing methods, materials, and design was ordered.

These extinguishers for many years had been made largely by riveting, and soldering was used to produce tight seams. There was much hand work, which it would be desirable to reduce. Modern seam-welding techniques seemed indicated, plus mechanization of other steps, and an increased use of conveyor systems. Such an extensive program as this required careful consideration of the relationships among design, materials, methods and machines. It was early decided to switch from the traditional copper to the newer and much stronger silicon bronze, which can be resistance-welded easily. The maker and Revere collaborated closely, and jointly worked out the time, temperature and pressure requirements for clean, sound welds. Revere also established the proper tempers for the body sheet so that it withstands more than the Underwriters' test pressure, but nevertheless is easily formable into a cylinder with beads that locate the top and bottom domes. Similar specifications were written for the sheet to be drawn into those domes, and even their design was studied and recommendations made. The extinguisher manufacturer, for his part, either disposed of old machines, or rebuilt them, and in addition bought much new equipment, some of it on special order.

This program involved one of the most complete renovations of plant and product which Revere has ever observed, and Revere considers itself fortunate to have been permitted to collaborate so closely. We were able to place at the service of our customer the accumulated knowledge of our Technical Advisors, the welding section of the Research Department and in addition called upon three of the Revere mills for practical suggestions. Revere's final step came when a number of the first extinguishers off the production line were tested in the Research Laboratory to make sure that the recommended annealing practices were adequate.

The report given here is necessarily condensed. Actually, the work occupied many months, and included a large number of conferences, much correspondence, and thorough testing of methods. That it all was supremely successful is shown by the results: a fire extinguisher that is 4½ pounds lighter, greatly improved in appearance and design, and produced with greater speed and economy.

This outstanding example of the benefits received when a manufacturer and a supplier collaborate closely is not unique. A pooling of knowledge toward a common end goes on constantly in every industry. Revere suggests, therefore, that no matter what it is you buy, you give your suppliers the opportunity to give you their experience as well as sell you their materials.

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(*Continued from page 518*)

Electronics Laboratory Advancements

PROFESSOR Albert G. Hill has been appointed director, and Jerome B. Wiesner, Associate Professor of Electrical Engineering, has been made associate director of the Research Laboratory of Electronics at M.I.T., President Killian announced in a recent statement. Professor Hill, who has been associate director of the laboratory, succeeds Professor Julius A. Stratton, '23, whose appointment as provost of the Institute is reported in this issue. Professor Wiesner has been assistant director.

Born in 1910, Professor Hill received the degree of bachelor of science from Washington University in 1930. After two years as engineer with the Bell Telephone Laboratories, he returned to Washington University for the master's degree, awarded in 1934. Professor Hill holds the doctor of philosophy degree in physics from the University of Rochester, where he was a fellow from 1934–1937. He came to M.I.T. in 1937 as instructor in the Department of Physics and in 1941 became a physicist on the staff of the Research Corporation in Los Angeles.

Professor Hill joined the Radiation Laboratory staff at M.I.T. in 1942, first as associate leader and later as leader of the radio-frequency components group. In 1945 he became head of the transmitter components division, the laboratory's largest technical division. In 1946, Dr. Hill was named associate director of the Research Laboratory of Electronics and associate professor of physics at the Institute. In 1947 he became professor of physics.

As chairman of the Basic Research Panel of the Research and Development Board of the National Military Establishment, Dr. Hill is an expert consultant to the Secretary of Defense. He is a fellow of the American Physical Society.

Professor Wiesner was born in 1915 in Detroit, Mich., and attended the University of Michigan, from which he received the bachelor of science and master of science degrees in 1937 and 1938, respectively. In 1938 Professor Wiesner was appointed chief engineer of the Acoustical and Record Laboratory in the Library of Congress, Washington, D.C. Here, under a Carnegie Foundation grant, he assisted in developing sound-recording facilities and associated equipment.

Shortly after the beginning of World War II, Professor Wiesner came to the Radiation Laboratory at the Institute and became a member of the laboratory's Steering Committee. When released from the Radiation Laboratory, Professor Wiesner joined the Faculty of the Institute as assistant professor of electrical engineering in 1946. In 1947 he became associate professor and assistant director of the Research Laboratory of Electronics.

The M.I.T. Research Laboratory of Electronics was organized in 1946 as a joint project of the Departments

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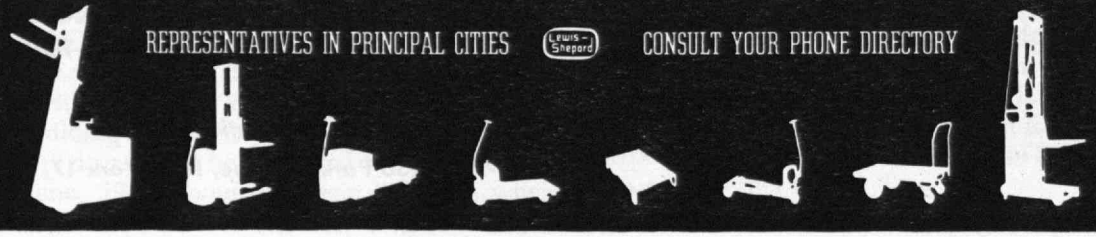
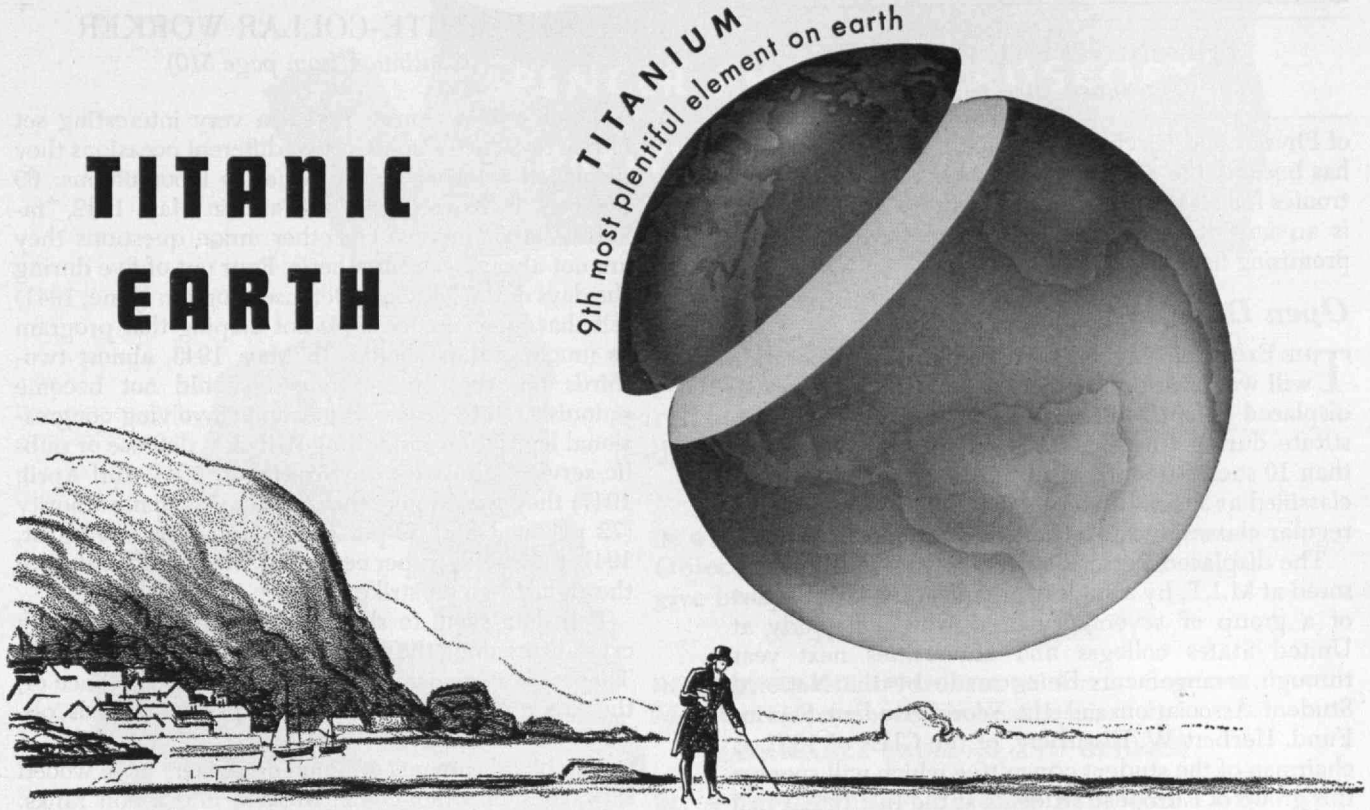


TITANIC EARTH



TITANIUM DISCOVERED

Back in 1791 an English clergyman, William Gregor, who liked to stroll and think on the beaches of Cornwall, became curious about the black sand he saw there. This gentleman of the cloth was also an amateur chemist and in this sand he discovered a new element. Almost coincidentally an Austrian named Heinrich Klaproth (also discoverer of uranium and zirconium) extracted the same thing from rutile and named it "Titanic Earth" for the mythical Titans. Hence our name Titanium.

Thereafter titanium was found in various places including the Ilmen Mountains of Russia (ilmenite) but although it is the ninth element in order of earthly abundance, it remained a mere laboratory curiosity until 1908.

TITANIUM OXIDE

At that time Dr. A. J. Rossi, expert in the reduction of metals, mixed titanium oxide with salad oil to make a white paint. In another 10 years a pure oxide was being produced which quickly won success as a pigment. Paint, false teeth, face powder, tires, shoes, glassware, textiles, inks, plastics, paper consumed an increasing tonnage of titanium oxide but still the pure metal was beyond industry's reach.

TITANIUM METAL & NATIONAL RESEARCH

Titanium is an affectionate metal, over fond of oxygen and nitrogen when at high temperatures. Even a fraction of a per cent of either makes titanium of little value as a structural material. Until recently there was no means of preparing titanium metal in a form sufficiently free of these elements to indicate any potential commercial value. Dr. W. J. Kroll of the Bureau of Mines has initiated many of the recent developments in titanium metallurgy by finding a means of preparing powdered titanium metal.

Only by exclusion of these gases can it be kept from embrittling combinations and when Remington Arms Company, a Du Pont subsidiary, laid its plans to produce metallic titanium in cast and rolled shapes, they knew that at National Research Corporation they could find the knowledge of vacuum technique that they needed.

The melting and casting of titanium was a natural for National Research. We planned the process, designed the equipment and installed it. Today this National Research Corporation pilot equipment is handling the highest quality of commercial metal — not much compared with aluminum — nothing at all compared with steel — but so promising that millions will be spent by the industry within a few years to increase the quantity and lower the price.

USES OF TITANIUM METAL

Titanium stands fourth in abundance among the structural metals and there is plenty in the U. S. A. Tremendous strength, light weight, and remarkable corrosion resistance (comparable only to that of the noble metals) is a unique combination. Coming at a time when long-sighted people are viewing our metallic resources with alarm, it has an assured future. With the price pulled down to a few dollars a pound or less, titanium will be of primary importance to manufacturers of aircraft, automobiles, electric devices, gas turbines, superchargers, marine hardware, rockets, optics, jewelry.

WHAT NEXT?

So, with the help of National Research's high vacuum know-how, another material has been taken from the test tube to the factory. Where else can good men and ideas help — where can they help you? At National Research the best in brains, organization, equipment, and an unequalled accumulation of unique experience are available.

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THE INSTITUTE GAZETTE

(*Concluded from page 520*)

of Physics and Electrical Engineering. The laboratory has become the nucleus of research activities in electronics for all members of the Institute's Faculty, and is an important center of graduate training in this promising field.

Open Door

THE Executive Committee of the M.I.T. Corporation will waive tuition fees for a number of European displaced persons to enable them to study at the Institute during the 1949–1950 school year. Not more than 10 such students will be accepted. They will be classified as special students at M.I.T. and will attend regular classes and take part in all student activities.

The displaced persons students, who will be sponsored at M.I.T. by a student organization, will be part of a group of several hundred who will study at United States colleges and universities next year through arrangements being made by the National Student Association and the World Student Service Fund. Herbert W. Eisenberg, of the Class of 1951, is chairman of the student committee which will sponsor this group of European students at the Institute. Final selection of those students who will come to M.I.T. is to be made by admissions officers of the Institute, after studying recommendations from officials of international relief agencies in Europe.

THE WHITE-COLLAR WORKER

(*Continued from page 510*)

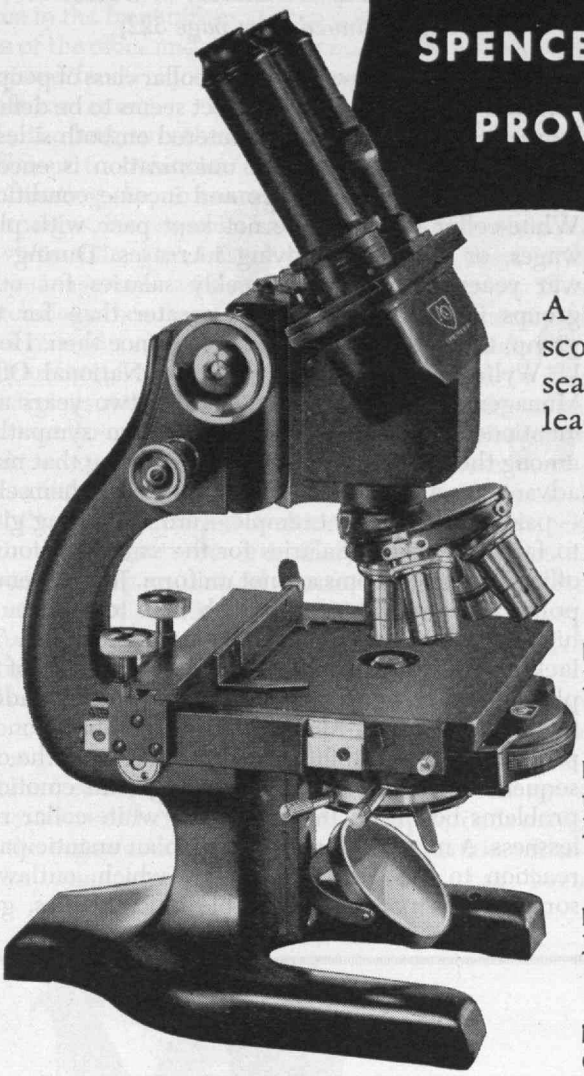
Their poll responses reveal a very interesting set of reactions to unions. On two different occasions they displayed a rather strong belief in labor unions: 69 per cent in November, 1941, and in May, 1942, "favored" labor unions. On other union questions they are not always so sympathetic. Four out of five during the days of the National Defense program (June, 1941) felt that labor unions were not helping that program as much as they should. In May, 1943, almost two-thirds felt that shop foremen should not become unionists. In the case of questions involving congressional legislation forbidding strikes in defense or public service industries (in November, 1941, and April, 1947) they would give the government that authority (72 per cent and 59 per cent). However, in August, 1947, they held (65 per cent) that workers should have the right to go on strike.

Poll data seem to show that white-collar thinking crystallizes along the pattern of the country as a whole. There is less opposition to, and greater acceptance of, the labor movement – a tendency which needs observation and study.

The blandishments of union organizers have wooed thousands of white-collar workers into union ranks. There can be no doubt that, to the labor movement, the white-collar force is a sizable, almost uncourted throng. What, then, is the outlook for unionization of

(*Continued on page 524*)

SPENCER PHASE MICROSCOPY PROVES MORE VERSATILE



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IN 2 DIFFERENT APPLICATIONS Dark Contrast, Low Objectives give best results.

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THE WHITE-COLLAR WORKER

(*Continued from page 522*)

the increasingly numerous white-collar class of people?

At the present time the prospect seems to be defined by arguments which may be entered on both sides of the ledger. Office and sales unionization is encouraged, for example, by price and income conditions. White-collar salaries have not kept pace with plant wages, or with cost-of-living increases. During the war years, for instance, weekly salaries for other groups increased three times greater than for this group; the pattern has not changed since then. Henry L. Wylie, in an address before the National Office Management Association convention two years ago, mentioned other factors creating union sympathies among these employees.[12] They are finding that many advantages almost exclusively enjoyed by themselves — paid sick leave, for example — are now being given to factory workers. Salaries for the same positions in offices and sales rooms are not uniform. Job-placement policies of management which fail to utilize the highest skill of an employee have nettled them. The lack of grievance machinery and of methods of exploring and recognizing personnel needs have added to their discontent. Managerial overemphasis on the productive responsibilities of supervisors and the consequent neglect of skills for dealing with emotional problems belong in this picture of white-collar restlessness. A minor influence has been an unanticipated reaction to the Taft-Hartley law which, outlawing some of the more reprehensible union tactics, gave

unionism "a new look" of respectability to the labor force in the front offices. The fast-growing mechanization of the office and sales room may prove to be a very decisive factor in the emergence of a white-collar labor movement.

In the long run, these developments may not prove sufficient to overcome certain traditional handicaps confronting the union organizer in this field. Union campaigns, for example, have collided constantly with a white-collar psychology that identifies them with the management area of business and industry. This psychology has been reinforced by an educational background and work situation characteristically "individualistic," just as it has been supported by the prestigious status supposedly attached to white-collar routines. Promotion to management from white-collar ranks — not as frequent as formerly, to be sure — occurs often enough to keep the mythology of vertical mobility alive. Marital ambitions and status which maintain a high turnover in this field likewise create, among women workers of course, a certain immunity to union propaganda. Like most workers, these employees show signs of a fear of the boss, a very efficient antidote to unionism, temporarily at least.

However weighty these arguments may in time prove to be, the fact is that white-collar unionization is progressing. Robert K. Burns, of the Industrial Relations Center, University of Chicago, in a recent news release has called attention to the deep inroads made by the organized labor movement into certain white-collar employments. Greatest success has been

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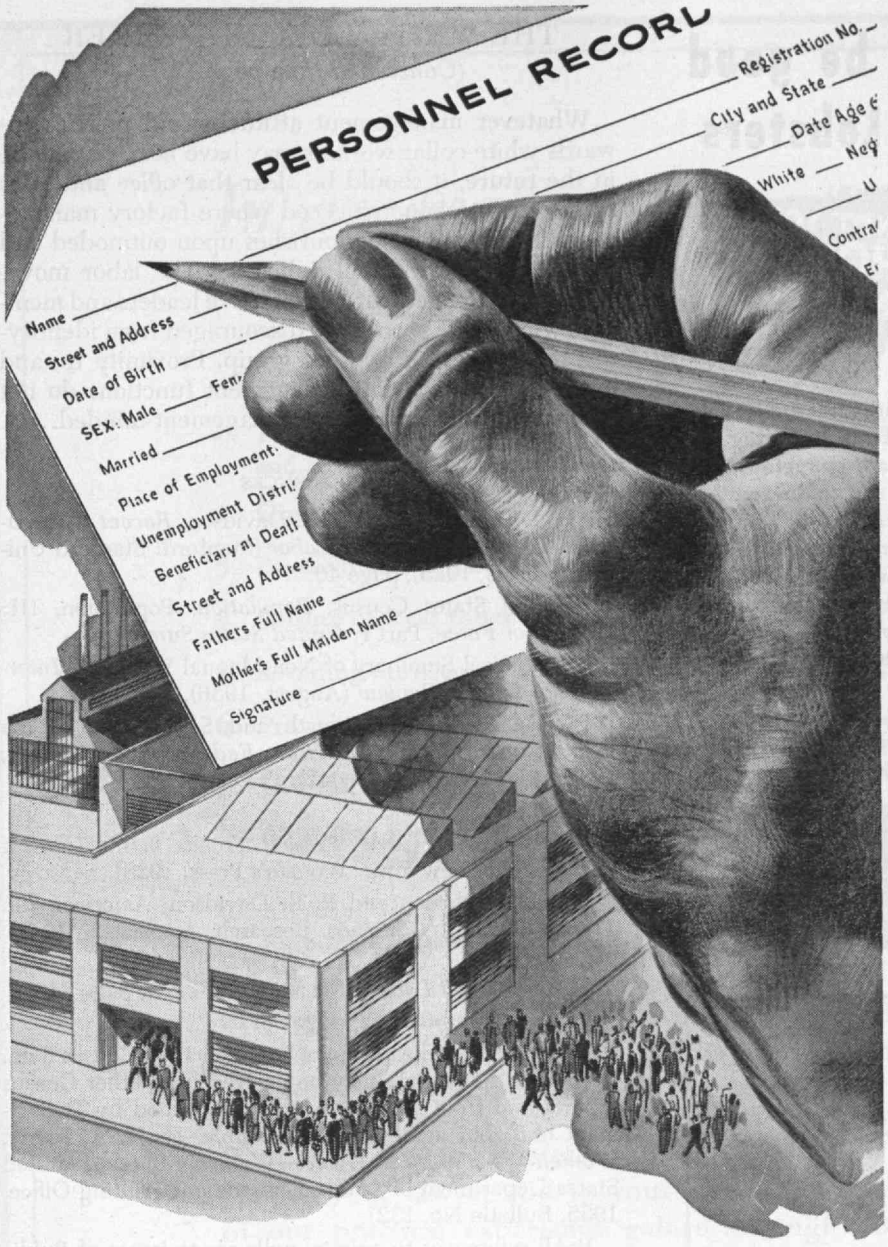
THE WHITE-COLLAR WORKER

(*Continued from page 525*)

achieved among these workers in the railroad industry, in the communications industries (where one in every three of them is a union member), and in public utilities. Petroleum, movies, securities, and insurance, along with government service, appear to be among the fertile fields.[13]

The United Office and Professional Workers, an affiliate of the Congress of Industrial Organization, is the largest specialized white-collar union. Next in size is the American Federation of Labor's Office Employes' International Union, which has reported successes in the public utilities offices. There are two independent national unions, the National Federation of Salaried Workers and the Communications Workers of America. Some of the older production workers' unions have arrangements for the inclusion of white-collar employees: the International Association of Machinists, the Electrical Workers Union, the Chemical Workers, the Hotel and Restaurant Workers, the United Auto Workers, the United Steelworkers, and the Industrial Union of Marine and Shipbuilding Workers. The most extensive study[14] to date of collective bargaining by white-collar workers has concluded that: "Unions are still struggling for a foothold in the office, concentrating on basic contract provisions like union security, salaries, seniority, and protection against layoffs and dismissals."

(*Concluded on page 528*)



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THE WHITE-COLLAR WORKER

(*Concluded from page 526*)

Whatever management attitudes and policies towards white-collar workers may have been or may be in the future, it should be clear that office and sales management cannot succeed where factory management failed: unionism flourishes upon outmoded and ill-considered personnel policies.[15] The labor movement and management lose effective leaders and members when large groups are discouraged from identifying themselves with either group. Proximity to, and even participation in, management functions do not necessarily make workers management-minded.

References

[1] H. D. Anderson and P. E. Davidson, *Recent Occupational Trends in American Labor* (Stanford: Stanford University Press, 1945), page 46.

[2] United States Census, *Population,* Population, III: *The Labor Force,* Part I: *United States Summary.*

[3] "Statistical Summary of Non-Manual Workers," *International Labour Review* (August, 1936), **34**:244–274.

[4] A. M. Edwards, "Growth and Significance of the White-Collar Class," *American Federationist* (January, 1938), **45**:32–34.

[5] *Ibid.,* page 32.

[6] Cf. Grace L. Coyle, *Present Trends in the Clerical Occupations* (New York: Woman's Press, 1928).

[7] H. D. Anderson and P. E. Davidson, *American Job Trends* (Chicago: Science Research Associates, 1941), page 45.

[8] *International Labour Review, opus cited,* page 248.

[9] Edwards, *opus cited,* page 33.

[10] These generalizations are based on 1940 Census data. Additional social data may be derived from other Census reports and from excellent studies published by Department of Labor agencies. For example, cf. H. A. Byrne, *Women Who Work in Offices* (Women's Bureau, United States Department of Labor, Government Printing Office, 1935, Bulletin No. 132).

[11] All references to opinion polls are to issues of *Public Opinion Quarterly,* which reports fully on them.

[12] "The Outlook for Office Unionization," *The Management Review* (April, 1947), **36**:187 and following.

[13] "A Union Target: The White-Collar Worker," *Business Week,* February 7, 1948, pages 88 and following.

[14] Eileen Ahern, *Status of Collective Bargaining in the Office* (New York: American Management Association, 1948).

[15] David Mack, "Office Unionization," *The Management Review* (April, 1948), **37**:181 and following.

HIGH TIDE OF CONFIDENCE

(*Continued from page 514*)

ing entirely upon sitting and returning with precision to the original shape on arising."[2] Thus, stylish men and women adorned their apposite ends in the Centennial year.

Politically, there was the not uncommon contrast between the headlined knaveries of certain politicians in the high places with the underlying honesty of the citizen at his lathe or desk. In the closing month of the Exposition, America's prince of political thieves was jailed: William Marcy Tweed. Black Friday, the day of the panic caused by the attempt of Jim Fisk and Jay Gould to corner the gold market, was now a seven-year-old memory. The recent investigation of the Credit Mobilier of America, which questioned whether high-ranking politicians had accepted stock in the Pacific railroads in return for votes, had kindly cleared most of them; but its disclosures were still a poignant memory. On the surface, the decade between 1865 and 1875 appeared to be marked by a scarlet record of low moral standards, with vultures of finance feeding upon the avarice of thousands who hoped to get rich overnight. At least such is the conclusion if we can accept as accurate the popular contemporary novel of Mark Twain and Charles Dudley Warner:[3] *The Gilded Age*. The Exposition closed within a few days of the election that was to have decided who should succeed General Grant as President of the United States; but several months were to elapse before the Electoral Commission was to decide that Rutherford B. Hayes, not Samuel J. Tilden, should be declared elected. Here, too, appeared strong evidence of political maneuvering.[4]

The matrix of American citizenship, in which the foregoing impurities shone out by their false brilliance, was sound, however. The United States was a nation of sturdy citizenry. Its mechanics and businessmen expected to get only what they earned, but as they viewed the tremendous store of the country's natural resources they were determined that their returns should be high. The 100-year-old democracy knew that it was immensely rich in minerals; that its industrial plant and transportation system were of vast value; that its soils and stands of timber offered wealth to those who should develop them.[5] It is of interest to review the steps whereby the American republic had risen to this high estate, during the cen-

[2] Advertisement in *Harper's Weekly*, 1873.

[3] Their delightfully plausible and ingenuously crooked hero, Colonel Beriah (also called Mulberry) Sellers, became the epitome of a promoter of shady ventures.

[4] *Harper's Weekly* called the peaceful setlement of this dangerous political crisis "The True Centennial Exposition."

[5] The Exhibition undoubtedly accelerated the recovery from the Panic of 1873, three years earlier, as the underlying factors of American financial strength, the country's resources, were there emphasized. Following the war, however, we were in a typical postwar period of low prices. As measured by the index of wholesale prices for all commodities, prices remained at low levels for nearly four decades after the Centennial, when the first World War caused a marked rise.

tury which the Exposition was to celebrate. Let us engage in such a review by visualizing how our grandfather might have regarded the first century of his nation's progress, while smoking his pipe and contemplating on life, more than seven decades back.

A Pragmatic Century

The smoker held his match, and his breath, until the choking fumes of the matches burned off. It was then safe to light cigar or pipe, and to meditate. Contemplatively, he could contrast the inconvenience of his grandfather's flint and steel with the easy utility of the friction match; a minor item in the long list of improvements which the team of progress – scientist, engineer, and industrialist – had given civilization in the century which had just ended. He had read inspiring accounts in the Centennial literature,[6] which had started with primitive beginnings and built up to the exalted state of American civilization which the Exhibition portrayed. Some of the more significant events in this story are shown in the table on page 512, in which events are listed decade by decade, in a way to reveal the accelerating pace at which American technology advanced.

The developments of this nation's first century pointed very definitely to unusual progress in many fields. In the educational field, one outstanding event in the story is worthy of specific emphasis, for its value in promoting American technological progress. On August 29, 1838, the packet, *Mediator,* sailed into New York Harbor from England, with the assets of the will of James Smithson, in the guardianship of Richard Rush. On behalf of the United States, Rush had entered friendly suit in the English Court of Chancery regarding the peculiar will of an Englishman who bequeathed to a country he had never seen, a substantial sum for education. The suit was settled in the unprecedently short time of two years in favor of the United States. Rush felt it wise to change the assets into gold sovereigns. Upon arrival in New York, Rush took the assets of Smithson's estate to the Philadelphia mint, and obtained a receipt for $508,318.46. Eight years later, after much debate, Congress accepted Smithson's gift to America, and the Smithsonian Institution for "the increase and diffusion of knowledge among men" was established. Thirty years later this famed institution played a significant role in Philadelphia. Smithsonian sent 21 carloads of exhibits to the Centennial; 42 carloads came back. This influx caused the construction of an additional Smithsonian building, now housing the Engineering and Industry Section.

Our smoker would undoubtedly ignore the early rumbles of the revolt against many social evils concomitant with the impressive growth of his country:

(*Continued on page 532*)

[6] *Harper's Weekly* and *Leslie's Illustrated Weekly,* prototypes of our present pictorial weeklies, devoted much space to the Centennial in 1876. Practically every issue of *Harper's* contained pages of woodcuts and text in that year.

HIGH TIDE OF CONFIDENCE

(*Continued from page 531*)

the brutally long working hours for women and children; the exploitation of immigrant labor; the lack of regulation to restrain men like Gould and Fisk; the cruelly overloaded horses, that had led to the charter of the Society for the Prevention of Cruelty to Animals. 10 years before the Exposition opened its gates. To this meditative smoker of 1876, it had been a pragmatic century. The American system was good – it worked. It had made many men wealthy through their own hard work, initiative, and ability; it had evolved a leading nation in spite of its youth. Surely this Exposition, that would display the successes of the American system, would be a show worth attending.

Up-to-Date Construction in 1876

On one or another of the roads leading to the Exposition, the visitor endured his mud-mired hackney or carriage as an act of God cheerfully to be accepted. He would particularly appreciate the narrow-gauge railroad, which, for $0.05 would give him a 20-minute tour of the grounds. Visitors were advised, however, to make the "rapid tour" of the indoor avenues of the main buildings on foot, and should allow three days for the 25-mile walk. Even by today's standards, the Centennial exhibition was of large dimensions. There were 75 acres of buildings in the 236 acres of West Fairmount Park which was enclosed for the Exposition. The Main Exhibition Building exceeded one-third of a mile in length, and Machinery Hall was 1,402 feet long – more than a quarter of a mile.

It was a well-organized exhibition, which cost a $0.50 note to attend. For the convenience of the public, "rolling chairs" were available at $0.60 an hour, and many fountains dispensed soda water at $0.10 per glass. There were separate parlors for ladies and gentlemen, with barber shops to trim the bushy beards of the latter. There were carriage stands where one could check his buggy or farm wagon, telegraph service, messenger boys, and guides who spoke all languages.

Hideous architecture characterized most of the buildings, as might be expected in a period when architects revealed their aesthetic taste in city buildings with ponderous façades of cast iron or stone, and suburban mansions enlivened by disporting stags, or dogs, each in rigid cast-iron pose. Except for the granite Art Gallery, the structures of the Exposition faithfully portrayed the atrocious architectural styles of the period. That art could complement utility in the design of world's fair structures was a concept that was to await the Columbian Exposition at Chicago in 1893. Electric lights would then be available to emphasize, by night as well as by day, the beauty of the latter exposition, 16 years later.

Much timber construction was used in Philadelphia, not only because of the temporary nature of the structures, but because it was the practical solution for a substantial proportion of the bridges and buildings throughout the country. Substantial tonnages of wrought-iron shapes were used, however; the 672 iron

(*Continued on page 534*)

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(*Continued from page 532*)

columns of the Main Building varied from 23 feet to 125 feet in length and weighed as much as 1,100 tons. It is probable that very little rolled steel was used, as steel shapes could still be called experimental; the Bessemer patent was but two decades old, and the first commercially successful open-hearth steel plant had started construction only seven years earlier.

A building contractor would note that "Portland cement, its uses exemplified," was listed in the catalog of exhibits, but he would find that such exhibits were limited. He would find that most of the building footings of the Exposition were of stone, and he would walk on vast areas of plank flooring, laid on the ground — an indication of the pioneer status of concrete construction. Tin ("the best roofing known in this climate") covered the 20-acre Main Building.

Engineering Contrasts

To the modern structural engineer, the woodcuts showing the construction of the huge buildings of the Exposition provide an interesting study. In the partly built Machinery Building, bearded men examine drawings (it was a little too early for blueprints), while, mostly by hand, heavy timbers are unloaded from trains of cars drawn by tiny steam locomotives. From the plank floor architects scan the wide-span roof trusses; the top chords are of wood, with wrought iron tension and compression members below. Challenging framing problems are suggested by the view of the all-wood, Gothic-arched trusses for the roof of Architectural Hall.

Striking demonstrations of hand labor are seen in the woodcuts. Twenty-six men carry a wood girder-truss to the Main Building; there are the double-yoked hand rollers, each with six men on either side alternately pulling them back and forth across a narrow road. A wood capstan raises a tall column, five men

(*Concluded on page 536*)

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(*Concluded from page 534*)

pushing on either arm. Eight little foreign workmen tug at a multiroped hand-operated pile driver with weight hung from a timber tripod labeled with mysterious hieroglyphics. They are building the foundation of the Japanese building which later became so popular.

Occasionally, there is evidence of power-driven construction equipment. Fezzed Turkish commissioners superintend the unloading of a heavy crate from a flat car, on which is mounted a timber boom, powered by a diagonal-cylindered engine with vertical boiler. Progress over the ancient method of carrying large blocks of stone is also evidenced. As against the Appian-Way method, in which the stone was carried on slings hung from shoulder-borne poles, heavier stones were carried at the Exposition on a cleverly designed truck. The truck consisted of an overhead timber frame supporting two wooden drums with ratchets and pawls at their ends. Cables from the drums carried the stone. The underframe was a four-wheeled wagon, drawn by two horses.

The term "chrome engineering," used by an editor to voice his objection to so much garish paint and gold leaf, reveals the working leaven of the urge for the blending of art with utility in product design. America was progressing and future expositions would give less space to "horses, asses, and mules." Soon there would be no exhibits at all under such headings as "animal power machinery." An examination of the record of the actual exhibits is therefore worth our while, and will be undertaken in Part II of this article which will appear in the July issue of The Review. Of one thing we may be sure: hand-powered machinery was very definitely on the way out in the year 1876, when visitors from all parts of the world visited Philadelphia in celebration of the 100th birthday of the United States of America.

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CARL MALMBERG

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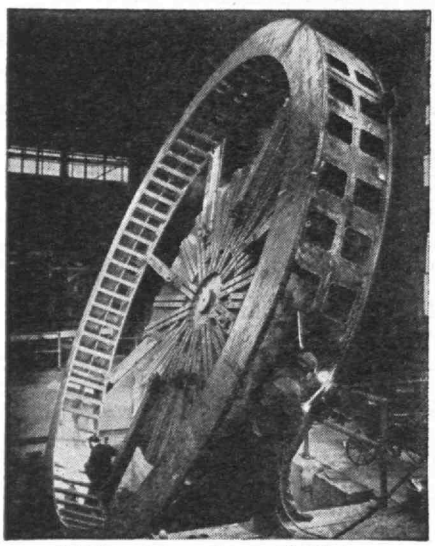
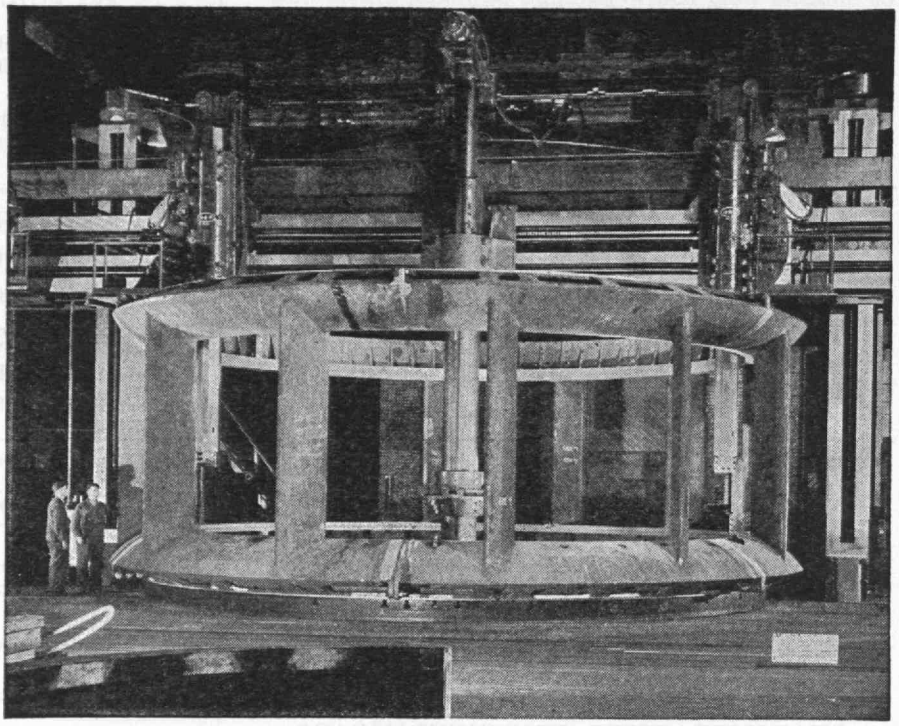


Welding stator yoke on 38,889 kva hydraulic turbine-driven generator.



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Opportunities Everywhere

New developments in every department mean almost endless opportunities for young engineers. Right now, the erection shop is building a big crusher for processing taconite in the Mesabi range, and we are supplying most of the other ore processing equipment for this gigantic plant, too. At our Norwood plant, engineers have completely rebuilt the production system on motors and small pumps for greater efficiency and lower costs.

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The thing that influenced me most when I left the University of Illinois to join Allis-Chalmers, was the tremendous breadth of opportunity. Some of my friends from that GTC class of 1930 are sales engineers now, some are design engineers, some have traveled around the world with erection crews. I chose manufacturing because I like to see things take shape before my eyes. I tried a good many things before I made my choice and my choice has been good.

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THEIR LOYALTY TO M·I·T..... AND THEY SHOW IT BY BACKING UP THEIR ALUMNI FUND.

Alumni AND Officers IN THE News

Platform Pronouncements

JOSEPH H. KEENAN'22, Professor of Mechanical Engineering at Technology, was the speaker on May 16 at a meeting of the American Society of Mechanical Engineers, Applied Mechanics division, Boston section. Professor Keenan's subject was, "Two Hundred Years of Thermodynamics and Heat Engineering."

CHARLES A. THOMAS'24 will be the speaker at the commencement exercises of the Georgia Institute of Technology on June 13.

CHARLES M. COOPER'25 spoke on the subject of "Bubble Formation" at a meeting of the Charleston section of the American Institute of Chemical Engineers.

J. ROBERT BONNAR'27 spoke at the spring meeting of the midwest section of the American Association of Textile Chemists and Colorists on May 7. Mr. Bonnar chose for his subject, "Inner Workings of A.A.T.C.C. Research."

ROBERT K. KULP'35 discussed "Ferroalloys Used in Steelmaking" at a meeting of the Rocky Mountain chapter of the American Society for Metals on April 15.

KARL T. COMPTON, Chairman of the M.I.T. Corporation, delivered a speech in Paris, France, on April 30 at the Velodrome d'Hiver on the occasion of the "International Day of Resistance to Dictatorship and War." Dr. Compton's speech was entitled: "The United States and Atomic Energy."

GEORGE B. WATERHOUSE, Professor Emeritus of Metallurgy at the Institute, received an honorary degree from, and delivered the commencement address at the Nova Scotia Technical College at Halifax on May 6.

Among the speakers who took part in the Metallurgy Colloquium at the Institute which took place February 23 through May 11 were: ARTHUR F. TAGGART'13, Professor at Columbia University, "Mineral Engineering as a Profession"; OLAF N. ROVE'39, "Availability of Iron Ore Reserves and Trends in Search of New Supplies"; ROLAND D. PARKS, Associate Professor of Geology, M.I.T., "Resources of Some of the New Metals: Titanium, Zirconium, Tantalum and Columbium"; ROBERT R. SHROCK, Associate Professor of Geology, M.I.T., "Hunting for Aluminum Ore in the Caribbean"; and A. M. GAUDIN, Professor of Metallurgy at the Institute, "Use of Radioactive Tracers in Mineral Engineering Problems."

Industrial Interest

HOWARD P. CLAUSSEN'16 was elected to membership on the board of directors, and CHARLES W. LOOMIS'16 was elected a vice-president, of the Bemis Bro. Bag Company at an annual meeting held in St. Louis.

L. G. LEE THOMAS'20 has been named president of the Hamilton Thomas Corporation.

ALBERT S. REDWAY'23 is now the president and general manager of the American Paper Goods Company, Kensington, Conn.

IRVING W. WILSON'11 has been named senior vice-president of the Aluminum Company of America.

Active Authors

The following alumni and staff members are contributors to the eighth edition of the *Standard Handbook for Electrical Engineers:* CARL M. GILT '17, LATIMER F. HICKERNELL'22, HARRY E. KENT'23, TRUMAN S. GRAY '29, ARTHUR A. JONES'29, ST. GEORGE T. ARNOLD'30, DONALD G. FINK'33, JOHN G. TRUMP'33 and HERBERT B. DWIGHT, Staff. McGraw-Hill Book Company, Inc. 1949.

THOMAS C. DESMOND'09 is the author of "Making Automobiles Safer," an article which was published in the May, 1949, issue of the *American Mercury.*

Three professors at the Institute have collaborated on a recently published book entitled: *Thermodynamic Charts for Combustion Processes,* a two-part volume. The coauthors are: HOYT C. HOTTEL'24, Professor of Fuel Engineering; GLENN C. WILLIAMS'42, Associate Professor of Chemical Engineering; and CHARLES N. SATTERFIELD'43, Assistant Professor of Chemical Engineering. John Wiley and Sons, Inc.

We have recently seen a reprint of an interesting article on "The Composition of Chinese Food" which had been published in the *Journal of the American Dietetic Association,* Volume 25, Number 1, January, 1949. The authors are: ROBERT S. HARRIS'28, FLORENCE K. C. WANG'46, YING H. WU'46, CHI HSUEN S. TSAO'46 and LENORE Y. S. LOE'46.

BERNARD VONNEGUT'36 contributed "A Capillary for Measuring the Deposition of Water Drops on a Surface Moving Through Clouds" to the February, 1949, issue of the *Review of Scientific Instruments.*

WILLIAM R. HAWTHORNE'39, Professor of Mechanical Engineering at the Institute, is the author of "Induced Deflection Angle in Cascades" published in the April, 1949, issue of the *Journal of the Aeronautical Sciences.*

WILLIAM R. SAYLOR'41 wrote "Instruments for Measuring Sound and Vibration" which was published in the March, 1949 issue of *Electrical Manufacturing.*

RAYMOND M. REDHEFFER'43 contributed an article to the *Journal of Applied Physics,* Volume 20, April, 1949, entitled: "Microwave Antennas and Dielectric Surfaces."

DIRK J. STRUIK, Staff, is among the contributors to the book, *Philosophy For the Future,* published by the Macmillan Company. 1949.

JOHN E. BURCHARD'23, Charles W. David, and Julian P. Boyd have edited a new book entitled: *Planning the University Library Building* which is a summary of discussions by librarians, architects and engineers. Published by the Princeton University Press. 1949.

HUGH H. SKILLING'30 is the author of *Exploring Electricity,* published by the Ronald Press. 1949.

Applauded Appointments

JEROME C. HUNSAKER'12 has been appointed to the Board of Regents of the Smithsonian Institution for a term of six years.

THOMAS S. HOLDEN'16 was the chairman of the nominating committee which presented its report at the 28th annual meeting of the New York Building Congress on May 7. C. GEORGE DANDROW'22, toastmaster and chairman of the dinner committee, is a vice-president and a director of the Congress. LOUIS H. SKIDMORE'23 took office as the new president and director of the Congress on May 10.

ALBERT E. BACHMANN'21 is the president of the Technical Association of the Pulp and Paper Industry.

JAMES C. EVANS'25 was appointed as civilian assistant to the Secretary of Defense. Announcement of Mr. Evans's appointment was made on April 28 by Secretary of Defense Louis Johnson.

JULIUS A. STRATTON'23 has been appointed to the new academic administrative post at the Institute which carries the title of provost. The duties of this new office, which Professor Stratton assumed on April 15, are described in the Institute Gazette section of this issue of The Review. ALBERT G. HILL,

Staff, has succeeded Dr. Stratton as director of the Research Laboratory of Electronics and JEROME B. WIESNER, Staff, has been appointed associate director of the laboratory.

The 1949 annual election of officers of the Boston section of the American Institute of Electrical Engineers includes the following Alumni: Chairman, JOHN J. LOUSTAUNAU'32; Vice chairman, LAURENCE F. CLEVELAND '35; Assistant Secretary-Treasurer, EDGAR P. EATON, JR., '44.

Society Sessions

Several Alumni and Staff members presented papers at the 1949 Washington meeting of the American Physical Society on April 28, 29, and 30 in Washington, D.C. Among them, in the order of their presentation, were: J. S. CLARK, Staff, C. Y. TSAO, Staff, W. W. Drake, "Magnetic Measurements on the M.I.T. 300-Mev Electron Synchrotron"; W. M. SHAKESPEARE, JR., '42, J. E. THOMAS, JR., Staff, B. Cohen, R. B. Pattern, and V. P. Henri, "Ceramic Materials for Synchrotron Vacuum Tubes"; ROBERT I. HULSIZER, JR., '48, "Further Results in the Search for Electrons in the Primary Cosmic Radiation"; BERNARD T. FELD, Staff, "Angular Correlations in Successive $\alpha-\gamma$ Emission and the Excited State of Li^{7}"; W. W. BUECHNER'35 and E. N. STRAIT, JR., '48, "Excited State in Be^{10}"; JOHN H. TINLOT'43 and Bernard Gregory, "Interactions of Ionizing Cosmic-Ray Particles at 10,600 ft. Altitude"; MARTIN DEUTSCH'37 and R. G. FLUHARTY'49, "Low Emission Probability Gamma-Rays"; MARTIN DEUTSCH'37 and DONALD T. STEVENSON'44, "Nuclear Lifetime for a Quadrupole Transition in Cd^{111}"; HERMAN FESHBACH '42, "The Phenomenological Theory of Nuclear Forces"; MARTIN DEUTSCH '37 and Franz Metzger, "Correlation between Direction and Polarization of Successive Gamma-Ray Quanta"; MANFRED A. BIONDI'44 and SANBORN C. BROWN'44, "Measurements of Positive Ion-Electron Recombination"; H. FESHBACH'42 and MELVIN LAX'43, "Meson Production in a Photonuclear Collision."

The second international conference of the Institute of Aeronautical Sciences and the Royal Aeronautical Society was held on May 24, 25 and 26 in New York City. EDWARD S. TAYLOR, Staff, was chairman of the morning session on May 24 during which NEIL BURGESS, JR., '41 and J. C. Buechel presented, "Recent Design Refinements in Turbojet Engines." THEODORE P. WRIGHT'18 was the guest speaker at the luncheon which followed the morning session. On May 25 the chairman of the afternoon session was JOSEPH S. NEWELL'19, and ORVILLE R. DUNN'39 presented "Aerodynamically Boosted Surface Controls as Applied to the DC-6 Transport" at the evening session. G. S. SCHAIRER'35 presented "Aerodynamic Efficiencies of Large Landplanes" at the afternoon session on May 26.

The following members of the Institute's Electrical Engineering Department were contributors to the 3d annual New England Radio Engineering meeting which was held in Cambridge on May 21. Papers were presented by: Professor ERNEST A. GUILLEMIN'24, "The Approximation of High-Q Performance by Means of Low-Q Circuits"; Associate Professor TRUMAN S. GRAY, "Electronic Engineering in Nuclear Instrumentation"; ERNEST R. KRETZMER'46, "Phase Measurement at Audio and Ultrasonic Frequencies." Professor IVAN A. GETTING'33 was the speaker at the luncheon and discussed "The Idiosyncrasies of the Synchroton."

RICHARD H. BOLT, Director of the Acoustics Laboratory, Staff, became President of the Acoustical Society of America at its annual meeting in New York which took place May 4 through May 7. PHILIP M. MORSE, Professor of Physics, on leave from the Institute to take an assignment with the War Military Establishment, has been elected president-elect and will take office for one year beginning in May, 1950. LEO L. BERANEK, Technical Director of the Acoustics Laboratory, was elected vice-president for the 1949–1950 year.

Proudly Presented

LOUIS C. ROSENBERG'13 received the fine arts medal of the American Institute of Architects. The award was presented at the annual convention of the American Institute of Architects in Houston, Texas.

EDGAR R. SMITH'19 has been awarded the 1948 Hillebrand Prize of the Washington section of the American Chemical Society. Dr. Smith was cited for his "original work in physical chemistry, more especially contributions to electrochemistry and ebulliometry."

BRUNO B. ROSSI, Professor of Physics at the Institute, was presented with the Research Corporation Scientific Award on March 11. Presentation was made by JOSEPH W. BARKER'16, President of the Research Corporation. In addition to Dr. Barker and Dr. Rossi, speakers on the occasion included JAMES R. KILLIAN, JR., '26, President of the Institute; KARL T. COMPTON, Chairman of the M.I.T. Corporation; and JOHN C. SLATER, Head of the Department of Physics at the Institute. The award was presented to Dr. Rossi for distinguished research in the fields of cosmic radiation and the properties of mesons, as well as his work in nuclear fission.

Obituary

ROBERT T. JACKSON'80, Oct. 24, 1948.
JAMES H. S. BATES'85, March 10.*
JOHN H. DAMON'85, Sept. 8, 1948.
MIRIAM F. WITHERSPOON'85, March 14.*
JULIAN A. CAMERON'87, April 11.
PHILIP M. HAMMETT'90, March 14.
JOHN H. BIRKS'91, March 24.
LOVELL B. STOWE'93, Sept. 30, 1948.
OSCAR R. COUCH'94, Aug. 21, 1948.
TAKATERU KUKI'94, in Sept., 1948.
GEORGE L. BLAKESLEE'96, Dec. 15, 1947.
MALCOLM H. McGANN'96, March 25.*
NATHAN H. SMITH'96, Dec. 17, 1948.
MARTIN BOYLE'98, Feb. 25.
PHILIP RICHARDSON'98, April 9, 1948.
ALLEN LOOMIS'99, Jan. 10, 1948.
RALPH S. LORING'01, May 15, 1948.
ROLAND H. CAMP'03, Aug. 15, 1948.
MONTAGUE FERRY'03, April 11.
ALBERT W. BEE, JR., '04, Feb. 13.*
ROBERT S. GARDNER'05, Oct. 10, 1948.
JOHN J. DONOVAN'06, March 18.*
LLEWELLYN D. DAVENPORT'07, Oct. 16, 1948.
JAMES R. BANCROFT'09, May 7.
FRANCIS G. BELIVEAU'09, March 26.
MITCHILL ALLEN'10, Dec. 7, 1948.
PHILIP M. WENTWORTH'10, Feb. 18.
HERBERT H. STEVENS'12, Nov. 8, 1948.
MALCOLM C. MACKENZIE'14, March 31.*
THOMAS B. RICHEY'14, March 30.*
REUBEN BURTON'15, March 18.
HAMILTON S. FRAZINE'15, March 1.
KENNETH D. KAHN'15, April 1.*
GERALD B. ROBISON'15, Feb. 22, 1948.
WILL P. WATSON'15, Dec. 20, 1948.*
WILLIAM E. COFFIN'16, March 31.
CHESTER F. LEWIS'16, March 17.
JOHN B. PETERSON'17, March 24.
CHARLES S. DONOVAN'18, May 6.
RODNEY W. INGHAM'18, March 17.
ROBERT W. MITCHELL'20, March 29.*
GORDON T. WILLIAMS'23, Sept. 19, 1948.
HAROLD H. SIEGEL'25, Oct. 22, 1948.*
JAMES MEVAY'26, in Jan., 1948.
FRED C. NORBY'26, Dec. 24, 1948.*
CHARLES C. BUTLER, JR., '27, April 5.
GAILLARD HUNT, JR., '27, March 5.*
CHARLES C. LADD, JR., '30, May 6.
DARRALL S. PARSONS'30, May 28, 1946.
WILLIAM P. LIBBY, JR., '32, Feb. 15.
HUGH H. DAVIS'33, Dec. 8, 1948.
WALTER R. DALEY'35, Dec. 31, 1948.
LEON E. TEMPLE, JR., '35, April 29.
BERNARD C. RIDDELL'38, March 20.

* *Mentioned in class notes*

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Club of Central Pennsylvania

The spring dinner meeting was held in Harrisburg, Pa., on April 11 with 24 members and three guests present. Guests of honor were H. E. Lobdell'17 and D. P. Severance'38 who favored us with the movie, "M.I.T. in 1948" and talked informally on the doings around the Institute. In particular, Mr. Lobdell discussed the trends and changes over the 30-odd years in which he has been associated with Technology. The expansion in the student body and Faculty as well as in the financial backing of the school was especially significant since few Alumni apparently had realized how tremendous and reasonably steady the growth had been. The movies of the new construction, followed by a discussion, also were very enlightening. In conclusion, Mr. Lobdell and Mr. Severance discussed the very successful Mid-Century Convocation and told us of some of the many problems encountered in making it a success. Only one of our members, Farley Gannett'02, had been able to attend the Convocation, and he, also, gave a firsthand account of his impression of the affair.

The following Alumni attended: A. R. Brugnoni'26, F. A. J. Brown'26, J. P. Connelly'28, R. P. Crowell'30, J. R. Elliott, Jr., '23, F. Gannett'02, J. M. Longyear'10, E. J. Mink'22, E. H. Olmstead'37, H. Radcliffe'41, J. P. Richter'31, F. A. Robbins, Jr.,'02, R. P. Rudolph'28, R. E. Smith'41, F. A. Thas'28, P. E. Tillson'06, W. H. van Buren'32, C. J. Walton'14, E. A. Weimer '98, H. W. Welch'47, F. H. Wells'18, G. C. Wilson'15, B. P. Young'26, S. I. Zack'22 and Harris Bixler, Jr., guest. — HAROLD RADCLIFFE'41, *Secretary,* Irving Manor C13, Mechanicsburg, Pa.

M.I.T. Club of Chicago

The Club was host to the chairman of the Institute's Corporation, Karl T. Compton, and President James R. Killian'26 in the Tower Rooms of the Stevens Hotel on April 14. Some 220 Midwestern engineers and guests availed themselves of this exceptional opportunity to greet the new prexy. Several out-of-town guests were present. Club President Herb Kochs'24 and attendance chairman, Bud Meissner '43 had extended a cordial invitation in behalf of the Club to all the M.I.T. Clubs and Alumni in the Midwest area as far north as Minneapolis, south to St. Louis and as far west as Omaha.

After the social hour in the Lower Tower Room, we all adjourned to the very lovely Upper Tower where, to the strains of very soothing dinner music, we indulged ourselves in one of man's favorite pastimes, the absorption of vitamins A,B,C,D and E in the form of a fine dinner excellently served by the hotel staff. At the conclusion of the dinner, President Kochs opened the meeting by welcoming two former presidents of the Club and the oldest members present, Lonsdale Green'87 and Richard E. Schmidt'87 who were seated smack down in front of the speakers table.

President Kochs next called on our world traveler and member of the M.I.T. Corporation, James M. Barker'07, who was toastmaster of the evening. Jim paid high tribute to Dr. Compton for his accomplishments during the years he was president of the Institute. Dr. Compton gave us many interesting side lights on the Convocation at Cambridge and Boston. He said he felt that that event had served to focus the attention of both the Alumni and the general public on M.I.T. as an institution and particularly the contribution of scientists to the present and future of the world in which we live. He prophesied that scientific education would occupy an increasingly important role in making the world of tomorrow better.

Jim Barker then introduced Dr. Killian, paying him high compliment and stressing the tremendous job that lies ahead. Dr. Killian, commenting on the Convocation, said he noted a tremendous welling up of a new pride in M.I.T. and its accomplishments. He felt the Convocation struck a note of optimism through the feeling that we can lick any of the problems which may lie ahead of us. He gave us a résumé of recent changes at Technology and discussed the high lights of the annual report of the Institute. Dr. Killian touched on the current drive for special funds now being undertaken, the objectives of which are to provide: 1. A proper wage scale for the Faculty. 2. A rounded educational community. 3. A proper contribution to the creative work of the country. 4. To maintain educational leadership. 5. To particularly maintain independence as an educational institution. He stated that if the high quality of education is going to be sustained, the independence of privately maintained institutions must be funded.

At the conclusion of Dr. Killian's talk, Sherry O'Brien'17 made an announcement regarding the special honors to be paid to M.I.T.'s Dr. Lewis at the Edgewater Beach Hotel on the evening of May 7, presentation of the Gold Medal Award for 1949 at the 26th annual meeting of the American Institute of Chemists. All Technology men are urged to attend this event.

We nominate as the lady of the month, Romeé Wahl, a freshman at Chicago Girls' Latin School, a prospective future M.I.T. co-ed who attended the dinner with her father, Arnold Wahl'13, President of Wahl Institute. We nominate as the man of the month, Ralph Laredo'44 of Liquid Carbonic's gas division, who was in town from Mexico. Ralph, a former member of the Club, was recently promoted to the capacity of district superintendent of Latin American gas plants. He recently had an addition to his family in the form of a daughter, Suzanna, 8 weeks old.

Our meeting was graced by the presence of several alumnae and lady guests among whom were the following: Mrs. Freeman Hinckley'10, a close personal friend of long standing of both Dr. and Mrs. Compton. Mrs. Ruth Smith'29, with her husband. Ruth was a former member of the Washington Society of the M.I.T. when she was a consultant to the United States Public Health Service. She returned to Chicago a year ago, and is now confining herself to domestic duties for her husband who is with the Chicago U.S. Engineers. Wellesley College was represented in the person of Muriel Pfaelzer, Wellesley, 1948, now on the staff of the Chicago Francis Parker School. Muriel advised that she has always had such good "connections" with M.I.T. that she couldn't resist the invitation of Jim Hart'42 to attend this dinner. Jim is with the Schwarz Paper Company. Mary Ann Crawford'29 lent her charm to our meeting. Mary Ann runs her own architectural business. Ex-Wave Margaret Newman'43 was also "aboard." Margaret assisted the attendance committee in personally contacting the various Alumnae in and about Chicago to attend this event.

Dr. I. D. Thrasher'27, VII, was attending his first meeting since before the war. Doc Thrasher, who is a practicing surgeon in Chicago, obtained his degree in Quantitative Biology at the Institute and continued his medical education at Johns Hopkins University. He with Mrs. Thrasher were particularly anxious to hear Dr. Compton again, for they last heard him shortly after his return from the Pacific at the Washington Society of the M.I.T. Dinner. Ed Boulger'44 and Mrs. Boulger drove in from Kankakee to attend their first club meeting. Ed is a chemist with the American Marietta Paint Company. John LeBolt '42 and his lovely wife, Nancy, were with us.

One of our many visiting guests was Ted A. Mangelsdorf'26 of the Texas Company who brought along his son, Fred, a senior at Lockport High, Lockport, Ill. Fred is being groomed as a future M.I.T. engineer, while another son, Ted, Jr., is presently a sophomore at the Institute. All three attended the recent Convocation at Cambridge. Congratulations to Ted, Sr., on the fine family of engineers he is developing. F. E. Payne'05 of Crane Packing Company and G. P. Palmer'04 of the Baltimore and Ohio Railroad had a 10-year reunion at this dinner. Both were born and brought up in Winchester, Mass., and were deep in reminiscing when last seen. Standard Oil's very busy and dynamic board chairman, Robert E. Wilson'16, flew in from New York from a meeting of Pan American Oil and arrived just in time to hear the addresses of Drs. Compton and Killian. It was good to

see Bill Steinwedell'25 who had just returned from Europe where he had been a consultant on the Economic Co-operation Administration staff. Bill is now assistant to the President of Fansteel Metallurgical Corporation in North Chicago.

Allen Abrams'15, Vice-president and Technical Director of Marathon Paper Mills, journeyed down from Wausau, Wis., to renew acquaintances with his many friends in the Club.

Our Club Vice-president, John Barriger, "threw" one of his favorite breakfast parties the day before the Compton-Killian Dinner at the Club in honor of Dean Everett M. Baker who was passing through town on the way to the convention of college deans being held in Highland Park's Moraine Hotel. Several officers and directors of the Club joined John at this breakfast which was such a pleasant and enjoyable occasion that John remarked it might be a good idea to hold a breakfast club meeting. Everyone is so fresh and in such good spirits (or are you?) in the morning after a nights' rest that it might be the better time to hold a meeting than at the end of a hard day of business.

Announcement is made of the formation in Chicago of the 5,008th Research Development Group with Lars H. Sjodahl'35 as commanding officer. The Army has organized about 50 Research and Development Groups among reserve officers throughout the country as part-time organizations similar to other reserve units. Present members of 5,008 are M. E. Nicholson'39, B. D. Kribben'33 and T. E. Burke'38. This unit has 35 members at present and other qualified reserve officers are invited to join and partake in this very commendable work. For further information write to Lars Sjodahl, 1517 Hood Avenue, Chicago 26, or telephone him at his office, ARmitage 6-2171.

Regrets. Robert W. Van Kirk, Jr.,'18 passed away on February 12. Up to the time of his illness, Bob had been one of the most energetic and loyal M.I.T. men in the Chicago area. For three years he was treasurer of the M.I.T. Club of Chicago, and for five years prior to his illness he was an honorary secretary. To his family, our sincerest sympathy in the loss of a very fine husband and father.

Thanks. Club President Kochs expresses his appreciation to the dinner chairman and toastmaster, Jim Barker'07, to Dick Meyer, 3d,'42 for handling the arrangements, John Austin'36 for handling publicity and arranging the press conference prior to the dinner and Bob Meissner'43 who was in charge of attendance. Thanks also to Margaret Newman'43 for assisting in the arrangements for the Alumnae. — JOHN G. PRAETZ'28, *Secretary*, The Liquid Carbonic Corporation, 3100 South Kedzie Avenue, Chicago 23, Ill.

Detroit M.I.T. Association

The Association held its regular meeting on April 12 at the administration building of the Plymouth division of the Chrysler Corporation. As guests of the Chrysler Corporation, for which arrangements were made by Treasurer Tom Morrow, approximately 70 Alumni members were divided into parties of eight to ten members each, and each party was then conducted through the final assembly building. This building consists of a single room one-half mile long, containing two assembly lines moving longitudinally through the building and fed by subassembly lines moving at right angles to the main assembly lines.

The plant employs 14,000 persons and is the largest automobile assembly factory under one roof, having a capacity of 3,150 engines per day and 2,900 cars which roll off of the assembly lines at the rate of three per minute under their own power. There are no store rooms and all parts and bodies are kept moving from the time they arrive until the finished automobile rolls off the end of the line. Bodies are received from the Briggs Manufacturing Company and are scheduled five days in advance of final assembly.

Following the inspection tour, the Plymouth division furnished complimentary dinners consisting of shrimp cocktail, filet of beef, french fried potatoes, ice cream and cake, and LaCorona cigars. After dinner, A. H. Patterson, Vice-president and General Works Manager of Plymouth, gave a brief review of Plymouth's operations and introduced some of the principal executives of the organization. All members present enjoyed the plant tour, together with the excellent dinner, and an expression of appreciation was made to the Plymouth division by Club President John Cronin.

The following members were present: 1911: M. S. Dennett, J. N. French; 1913: M. H. Harrington, F. N. Phelps, E. D. Pratt; 1914: R. C. Doremus; 1916: P. C. Baker, C. T. Guething, C. F. Harrington, T. K. Hine; 1917: J. T. Cronin, C. T. Ellis, A. C. Litchfield, D. H. Parker; 1919: E. F. Doten; 1920: D. M. Ferris; 1921: L. W. Bugbee, Jr., E. W. Jackson; 1922: E. A. Ash, C. H. Burnham, W. W. Harris; 1923: F. A. Rood; 1924: W. G. Lovell, E. V. Martin; 1925: Franklin Fricker; 1926: P. B. Loomis, D. M. Sutter; 1927: J. S. Yates; 1929: C. B. Allen, Jr., H. F. Green; 1930: H. W. Chapman; 1931: E. P. Grenier; 1932: M. B. Ferar, R. W. Wright; 1933: C. E. Quick, J. D. Rumsey; 1934: Chesley Ayers, F. L. Haas, W. F. Rahles; 1935: W. H. Bagley, B. R. Bagley, T. F. Morrow, C. A. Piper, G. W. Trichel; 1938: R. J. Kingsbury; 1939: J. T. Massengale; 1941: E. W. Engle, Jr., T. H. Guething, Wai-Yum Yee; 1942: J. B. Davidson, R. E. Navin, S. H. Willard, Jr.; 1943: H. W. Wallace; 1944: R. F. Knop; 1946: W. S. Coleman, Jr., H. S. Freeman; 1947: W. J. Crawford, 3d, R. D. Harvey, J. C. Hobaica, John Karmazin, Jr., B. O. Lutman, Jr., W. H. Percival; 1948: Philip Bragar, G. E. Brown, R. V. Cadieu, P. E. Colvan, E. E. Hebb, Jr., J. W. Miller, Jr., H. N. Smith, Jr., Lyndon Welch. — R. GORDON SPEAR'26, *Secretary*, Fisher Body Div., 10-253 General Motors Bldg., 3044 West Grand Boulevard, Detroit 2, Mich.

M.I.T. Club of New York

It goes without saying that those of us who were lucky enough to have been on hand for the Mid-Century Convocation were deeply impressed with the magnificent showing which the Corporation and our Alumni put on. The Club was well represented, and, in fact, there were so many present that space will not permit their being listed herein. George Dandrow '22 led the inaugural procession and was cheered by his admirers from the sidelines. James R. Killian, our tenth President, made a very inspiring address of acceptance and was supported by an outstanding group of educators. The reception after Mr. Churchill's speech was most impressive and we were fortunate enough to hear a short informal talk from both Mr. and Mrs. Churchill.

On March 23 the board of governors instituted some radical but progressive changes in our Club. As a result of a special planning committee appointed to study and recommend a new scale of dues, it has been voted that a change be effective July 31, 1949. As of that date, there will be but one class of membership in the Club and the dues are to be reduced from the present $25 plus tax for resident members down to $10 annually. It was furthermore approved that those Alumni working or living within a 50-mile radius of New York City and who have been out of M.I.T. two years or less shall enjoy full membership privileges without payment of dues. In the future, the Treasurer will bill dues on or about September 1 for the entire fiscal year.

It was also voted to establish three standing committees: one, membership; two, programs; and three, publicity. We are going out after a minimum of 50 per cent increase in membership, and will provide continuing programs of interest throughout the year to encourage more local Alumni to attend. We have already published Volume Three of *M.I.T. in New York*, and mailed copies to the entire alumni body within the New York area. For the production of this bulletin, we are indebted to Mal MacNaught'24.

We regret to announce the passing of Caillard Hunt, Jr.,'27 on March 5; David C. Whitaker'39 on March 10; and A. L. Weil'01. — WILLIAM W. QUARLES'24, *Secretary*, 330 West 42d Street, New York 18, N.Y.

M.I.T. Club of Northern Texas

Thirteen Alumni from the Dallas area gathered at the home of J. P. Minton'12 to hear Winston Churchill's talk on March 31. Everyone was very much impressed by Mr. Churchill's remarks and regretted that they were unable to attend the Convocation in Boston, personally.

This meeting at Dr. Minton's home also provided an opportunity for a number of the "old-timers" around Dallas to meet some of the new Alumni who recently have moved into the area as a result of Chance Vought transferring its engineering operations from Connecticut to Dallas. It is expected that the aeronautical engineers will be an important addition to the Club. — D. H. CLEWELL'33, *Secretary*, Magnolia Petroleum Company, Box 900, Dallas 1, Texas.

M.I.T. Club of Philadelphia

The officers and executive committee met for a business session at the Meridian Club on March 14. At that time, plans were laid to make the ensuing year the best in the club's history in regard to both

the formal and the informal functions. The latter, this year, will be in the form of a club picnic provided that satisfactory arrangements can be made. Members attending the business meeting were: William H. Bertolet, 3d,'48; Frank S. Chaplin'32; Wiley F. Corl, Jr.,'39; Henry S. Dimmick'22; Robert M. Harbeck'28; Edward J. Healy'23; John Lawrence'32; George T. Logan'29; William H. MacCallum'24; Samuel K. McCauley'41; William H. Peirce'46; Charles W. Stose'22; Proctor Wetherill'34; and Robert E. Worden '36.

Among the Alumni and guests attending the thrilling Convocation and Inauguration of President Killian were these members of the Club: Herbert W., and Mrs. Anderson'15; Walter J., and Mrs. Beadle'17; Henry S. Dimmick'22; Robert L., and Mrs. Hershey'23; Henry W., and Mrs. Jones'26; William H., and Mrs. MacCallum'24; Samuel K., and Mrs. McCauley '41; James McGowan, Jr.,'08; Leonard C., and Mrs. Peskin'29; Edwardes S. Petze'28; Robert W. Weeks'13; and Robert E., and Mrs. Worden'36.

For information about Alumni in the Philadelphia-Wilmington area, telephone Boulevard 0287. – SAMUEL K. MCCAULEY'41, *Secretary*, 288 Copley Road, Upper Darby, Pa. *Assistant Secretaries:* WILEY F. CORL, JR.,'39, Box 358, Bryn Mawr, Pa.; WILLIAM H. PEIRCE'46, 532 East Mermaid Lane, Chestnut Hill, Philadelphia 18, Pa.

The M.I.T. Club of Rochester

"It's a privilege to be a physicist in this day and age, George B. Collins, Head of the physics department at the University of Rochester, told the Club at its meeting on February 20. Within the last 10 years, Collins pointed out, physicists have realized that the world they have been trying to describe in terms of two forces, must now be based upon three; that to the forces of gravitation (attraction of mass) and electromagnetism (attraction of charges) must be added the third force which is responsible for the attraction of particles within the atomic nuclei. Physicists are now "in the excited state" in a frantic search for information about these components and properties of atomic nuclei, and the era of the third force is underway. Instruments like the cyclotron at the University of Rochester, and the synchrotron at M.I.T. (as well as the cyclotron at Harvard) are the laboratory tools for the production and study of subatomic particles. Professor Collins was a member of the staff at the Radiation Laboratory at M.I.T. for six years, and succeeded Dr. Lee A. DuBridge as head of the physics department at the University of Rochester.

The following members were present: Collin H. Alexander'39, David L. Babcock'33, Malcolm A. Beers'47, Geoffrey Broughton'36, Winton Brown'34, Alfred E. Castle'40, Henry R. Couch'20, Leo Cravitz'44, C. King Crofton'22, Evan A. Edwards'37, Kurt J. Heinicke'32, William N. Hosley'48, Stanley E. Jensen'48, Frederick J. Kolb, Jr.,'38, Andrew Langdon'22, Harold H. Leary'23, Edwin M. Meyer'26, Charles F. Payne'33, David Richardson '37, Hugh M. Shirey'22, Henry H. Tozier '96, Vernon E. Whitman'22, Clarence L. A. Wynd'27. – FREDERICK J. KOLB, JR., '38, *Secretary*, Kodak Park Works, Building 14, Rochester 4, N.Y.

M.I.T. Club of Schenectady

A luncheon meeting was held by the Club at the Young Women's Christian Association on Wednesday, April 13. Our speaker was Helen S. Johnson, assistant director of the Schenectady Museum, who gave a most entertaining and informative talk on the various museums and historical collections in this vicinity, such as the Schuyler Mansion in Albany, the Old Stone Church in Schoharie, Guy Park Mansion in Amsterdam, and Fort Johnson, to mention just a few. Like natives of most areas, we were unfamiliar with many of the points of interest which she mentioned, and we left the meeting with considerably more knowledge of these spots and a great deal more ambition to visit some of them in the future.

We were further honored at this meeting by the presence of Karl L. Wildes'22, Associate Professor of Electrical Engineering and our Club's representative on the Alumni Council, who made the trip from Cambridge in order to hear our speaker and to see how our gatherings are run. We were, indeed, sorry that he could not stay longer with us, and we are looking forward to seeing him again in the near future.

Ben Thorn'41, capable chairman of the Club's education committee, reported that his group had held several meetings to map out and take action on the building of the new comprehensive high school for the city of Schenectady. It is the aim of Ben's committee to build up public interest in this project, and to assist in getting the program under way.

Present at the meeting were: P. L. Alger'15, E. H. Bancker'18, H. W. Bibber '20, K. L. Wildes'22, C. J. Koch, Jr.,'23, B. S. Weaver'25, G. R. Copeland'27, G. T. Bevan'31, C. F. Barrett, Jr.,'34, L. H. Dee'35, Harold Chestnut'39, D. C. Jackson,3d,'40, I. W. Collins'41, J. S. Quill'41, R. H. Simon'41, R. W. Stanhouse'41, B. C. Thorn'41, R. W. Austin'42, H. R. Brown, Jr.,'43, H. E. Harris'44, A. M. Varener '47, and Francis Brown, Jr.,'48. – IVOR W. COLLINS'41, *Secretary*, General Electric Company, Building 60 Annex, Schenectady 5, N.Y.

Southeastern M.I.T. Association

On April 18, 25 Alumni gathered in the Iron Room on the second floor of the Tutwiler Hotel in Birmingham, Ala., to honor Horace S. Ford, Treasurer of the Institute, who was visiting in Birmingham. Since the majority of the local chapter members were unable to attend the recent Convocation held in Cambridge, Mr. Ford chose as his subject, "The Recent Mid-Century M. I. T. Convocation." Since Mr. Ford is a great believer in the importance of people, his talk was primarily devoted to the particular parts played by the individuals in the planning and carrying on of the Convocation.

At the end of Mr. Ford's talk, Chapter President George J. Fertig'24 called for a report of the nominating committee. Prescott V. Kelly'13, as chairman, nominated Merrill E. Pratt'16 for president, and Amasa G. Smith'29 as secretary. A move was made that the nominations be closed and by unanimous vote the two were nominated as the new officers of the local chapter to take office immediately.

The following chapter members attended the luncheon in addition to those named above: Joseph G. Reid'08, Julian E. Adler'13, Ferrand C. Weiss'13, A. G. Wakeman'21, Oaklee E. Charlton'24, James F. Crist'24, E. Donald Early'24, Douglas F. Elliott'24, Fletcher G. Hamner'24, Charles Gaines'25, William H. Hassinger, Jr.,'27, J. P. Bailey'28, Laurence D. Luey'29, Charles B. Gamble, Jr., '34, Robert Coleman,Jr.,'40, David Thurlow'41, Tom Emberton'44, Theodore F. Randolph'44, Richard Adler'46. – JOHN W. POWERS, JR.,'33, *Secretary*, 401 Yorkshire Drive, Birmingham 9, Ala.

M.I.T. Club of Southern Texas

Karl T. Compton delivered the principal address during the fine and impressive dedicatory program of the Monsanto Chemical Company's Texas division. Joseph R. Mares'24, Vice-president and General Manager of Monsanto's new plant at Texas City, arranged and was general chairman of the program which took place on April 8 as follows.

10:30 A.M., dedication of Memorial, Texas City, H. K. Eckert, plant manager; 11:30 A.M., tour of the plant; 3:00 P.M., symposium, Shamrock Hotel, Houston, "Gulf Coast Hydrocarbon Resources: Prognosis and Prophecy." Moderator, William V. Houston, President of the Rice Institute; Speakers, Paul Weaver, Past President, American Association of Petroleum Geophysicists; Honorable W. J. Murray, Jr., Chairman, Texas Railroad Commission; Richard Gonzales, Economist, Humble Oil and Refining Company. 7:30 P.M., dinner, Shamrock Hotel. Speakers: William M. Rand, President, Monsanto Chemical Company; Warren S. Bellows, President, Houston Chamber of Commerce; Karl T. Compton, Chairman, Research and Development Board, National Military Establishment and Chairman of the M. I. T. Corporation, "Men and Ideas: The Objective and Resource of Our Scientific Educational Institutions."

Dr. Compton's address was a thorough and highly valuable analysis of his subject, as were also the papers delivered at the symposium. Those present at this dedicatory program included many leaders in the scientific, educational and industrial fields of Texas and the nation. – JOSEPH H. MCEVOY'21, *Secretary*, 202 McGowen Avenue, Houston 6, Texas.

M.I.T. Club of Virginia

The Club held a dinner meeting on April 13 at the Oakleaf Inn, Richmond, for members in the Richmond area and nearby cities. The meeting was addressed by two visitors from Cambridge; H. E. Lobdell, Executive Vice-president of the Alumni Association, and Donald P. Severance, Alumni Secretary. Mr. Lobdell told of the recent inauguration of President

James Killian, and Mr. Severance showed the beautiful colored film, "M.I.T. in 1948." He also told many interesting human-interest stories about Winston Churchill and his recent visit and nation-wide broadcast from M.I.T.

Thirty-two persons attended the dinner, including: Robert B. Arnold'08, Andrew L. Bell'06 of Petersburg, William F. Bennett'35, Robert S. Buford'47, Edmund S. Campbell'06 of Charlottesville, C. Clinton Carpenter'16 of Norfolk, Miles Cary '24, Richard H. Catlett'17, Arthur W. Davenport'23, Edward M. Epstein'21, Somerby R. Evans'23 of Hopewell, William H. Farrow, Jr.,'44, William R. Glidden'12, Wilber B. Huston'33 of Hampton, Walter K. Johnson'27, Wilmot H. Kidd '32, Kenneth G. MacIlroy'42, Joseph L. McKeague'14 of Hopewell, E. B. Maynard'24, H. C. L. Miller, Jr.,'23, Lewis N. Miller'33, James H. Scott'20, Frank L. Sheldon'40, Livingston S. S. Smith'38, John Stack'28, Endre Sziklas'26, and Garland A. Wood'47.

Every effort will be made to hold future meetings on Friday or Saturday for the convenience of members who live away from Richmond. Donald N. Frazier'11, Club President, presided. – JOHN SKELTON WILLIAMS, JR.,'22, *Secretary*, 1404 State Planters Bank Building, Richmond 19, Va.

CLASS NOTES

• 1885 •

It is sad to have to record the passing of so many members of our Class, but in the case of James H. S. Bates, who died on March 10 it may have been a blessing, for he had been ill for two or three years. His birthday was August 28 but from conflicting dates I am not quite sure whether he would have been 86 or 88 this year. He was born in the outskirts of Cincinnati, Ohio, but was really of New England stock, for he was a descendant of Clement Bates who settled in Boston in 1630, and his subsequent ancestors all lived in Boston.

Failing to get employment in 1885, he entered the junior class at Stevens Institute of Technology, Hoboken, N. J., and got his M.E. degree there with the class of '87. Afterward he had a large experience as an electric powerhouse expert. He was on the original staff of Frank J. Sprague who built the electric trolley system in Richmond, Va. Bates became the engineer of that line. About 1920 he moved to Olympia, Wash., and devoted himself to real estate and "application of engineering to agriculture." He was a life member of the American Institutes of Electrical Engineers and Mechanical Engineers; also a life member of the Technology Club of New York.

Miriam F. Witherspoon of Worcester, Mass., died in that city on March 14. Although she was by assignment a member of '85, I do not recall ever meeting her. She was born in Boston on January 16, 1861. She was a member of the Class of '84, Smith College, but after two years was forced to leave on account of illness. Later, she took special studies at M.I.T. and at Radcliffe.

She was general secretary of the Family Service Organization, formerly the Associated Charities, for 36 years and a leading pioneer social worker. Since her retirement, she had maintained her interest in the charitable organizations with which she had previously worked and had written a history of the co-ordinating organization. She had also continued her interest in the Worcester Animal Rescue League, of which she was president and a director for many years. She was known in Worcester as the "Grand Old Lady of Social Work." – ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

• 1886 •

Your Secretary has had no news from the members of '86 since he got together a few lines for the May issue, so he has nothing to report of a Class nature. I am writing this early in April for the June issue, preparatory to taking an automobile trip to Washington, D. C., with Mrs. Chase and a visiting friend from Bradford, England.

Anything I can say about the Convocation will be out of date when this is printed, but I might put in a word or two about my own experiences there. On Wednesday, the 30th, I got tickets for Mrs. Chase and myself, but was unable to get any for our guest; overflow tickets, however, were available and "my wants were all supplied." On the bulletin board of the registration lobby papers had been posted for the classes of 1900–1948, with an additional one for all earlier classes on which I put my "John Hancock" as Secretary of '86. As far as my inspection thereof went, there was only one name of an earlier date; Dearborn of '84. Others may have signed later. This brings '86 pretty near the top of the list! I spent Wednesday afternoon looking over the new Senior House, where I had been assigned a room, and in watching the finishing touches being given to Rockwell Cage where the huge screen for the television of the Boston Garden meetings was being set up. Having given my commendation to that undertaking (without having been asked for it!), I returned to Island Creek via Kingston on one of the few trains the New York, New Haven and Hartford Railroad have left running on the once popular Old Colony Branch to Plymouth.

Thursday I returned to Cambridge and to my room in the Senior House. This building zig-zags about on the side facing Memorial Drive and on the grounds side hides its main entrance under a porte-cochere as though it wanted to apologize for its looks. Of course, it is in a very unfinished state; the workmen were taken off so that it could be used temporarily. The managerial force was very attentive to the wants and needs of the guests. I think all using the accommodations were well pleased. The various exercises have all been reported, but I do want to speak of the huge crowds at the overflow meeting in the Rockwell Cage and the finished way in which the Garden speeches were relayed and the television reproduced upon the huge screen which everyone, except those directly in line with the iron columns holding up the roof, could see. As yet, neither radar nor anything else permits spectators to see through iron posts, and roofs do stay in place much better when they are supported. – ARTHUR T. CHASE, *Secretary*, Post Office Box 4, Island Creek, Mass.

• 1890 •

Miss Bragg, Burley, Goodwin, Greenlaw and Packard attended the Mid-Century Convocation; possibly there were others who were not seen in the vast crowds that were present at all of the meetings. Dr. Goodwin was an active participant in the inauguration of Dr. Killian. Sherman writes that he was very sorry not to be present but finds that sort of thing too tiring. However, he expects to be at the Alumni Dinner in June. He has been checking some of our missing class members as listed in the April Review, and writes as follows: "A. Sherman is doubtlessly Adelaide Sherman. She appears as 'Blackmer, Mrs. Adelaide S.'90, Box 223, Plymouth.' Gordon Eaton I knew slightly during the first year, which I think was his only year at the Institute; it is my impression that he came from Holliston or Milford. Frederick S. Hollis went to Johns Hopkins University and took a Ph.D. degree there, probably about 1894. He subsequently became biologist with the Boston Water Works and I was associated with him when I, too, was employed by the B.W.W., 1895–1898." His successor believes he is dead. "Nathan B. Wilbur was with us in Course I for two years, I believe. Later, I think he was in the city engineer's office at New Bedford. I think he has been dead for at least 10 years, possibly 20." The Secretary would like to receive suggestions as to where information might be sought of any of the others listed in April.

The Secretary and Mrs. Packard spent January and February near Winter Park, Fla., and drove to St. Petersburg hoping to see William P. Flint, but missed him. He spends his winters there at 3726 First Avenue North. Since then, he has written that he was on a visit to one of his daughters and family at Las Cruces, N.M. We were sorry to learn that he lost his wife, whom we had enjoyed meeting previously, last October. He returns to Coudersport, Pa., for the summer. – GEORGE A. PACKARD, *Secretary*, 53 State Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 5–213, M.I.T., Cambridge 39, Mass.

• 1893 •

The annual luncheon meeting of the Class will be held on Thursday, June 9 at the Engineers Club, 96 Beacon Street, Boston. Notices have been mailed to members of the Class located in the New England states and the New York City area.

Frederick W. Lord has recently published another interesting book entitled, *Contracting as a Profession*, the purpose

of which as stated in the opening chapter "is to explain a plan which would put the construction industry on a professional level, instead of on the present competitive one where money is the only determining factor." In presenting his professional plan, the author has taken advantage of the experience and knowledge acquired through his personal contacts with architects, engineers and owners over a period of 53 years as president and chairman of the Lord Electric Company which he founded in 1895. The appendix includes a proposed bill to replace the present cost-plus and other systems of contracting for public construction, by a system of negotiated lump-sum contracts. The book has been selected as required reading by students taking the course in estimating and job management in the Department of Building Engineering and Construction at the Institute. — FREDERIC H. KEYES, *Secretary*, Room 5–213, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 38 Chauncy Street, Boston 11, Mass.

• 1894 •

In the correspondence relating to our forthcoming reunion, a number of notes of interest have been received from men who for physical or other reasons will not be able to attend the reunion although expressing deep interest and regret that they cannot come. George Sherman writes: "Just to be in style I have poor circulation in my right foot, à la King George, and have been working on it both in the hospital and out for months. The doctor now seems satisfied with progress but it is very slow. I am home on crutches at the present time and have been for two months past. But it is out of the question to travel. Last June I sold control of the Akron Industrial Salvage Company to the Ohio Boxboard Company, but retain the Geo. W. Sherman Machinery Company business. Will have a new location for office and warehouse shortly. My business address, Post Office Box 630, will probably continue, and also my home address, 75 Edgerton Road, Akron 3, Ohio." Sherman mentioned seeing an article on Abbot and his picture in a recent copy of *Time*, and also stated that he was kept posted on the big Convocation affairs.

Harry Bates writes that poor health will prevent his coming to the reunion, much to his regret. Billy King has not been well but is much improved and will be here. Tom Richards is living in retirement at Duxbury and says that he is sorry not to be with us, but has found it necessary to eliminate such affairs for the past two years. We are sorry, too. Arthur Patrick has to refuse because of failing eyesight, for which we all sympathize with him, and we shall miss his fine companionship. Harry Hastings reports that 15 years of arthritis is reducing him to a condition where even writing is most difficult. Sympathy to him, too. Leslie Dana cannot be with us, although we had counted on seeing him again. A regretful reply from Arthur Tidd is also at hand. How much those who will attend would like to see all these fellows again. The spirit is fine, but the fact remains that we are no longer young. The next report will tell of those who are here for the 55th reunion. — SAMUEL C. PRESCOTT, *Secretary*, Room 5–213, M.I.T., Cambridge 39, Mass.

• 1895 •

Eddie and Mrs. Alden have taken their usual Florida trek. We heard of them in Daytona Beach and then on their way for a stay in Clearwater and St. Petersburg. It is time for their arrival home in Hartford, and we hope to get an account of their experiences. Sid and Mrs. Clapp have been recuperating from a severe illness in Cocoanut Grove, south of Miami, Fla. They report their recovery and enjoyment of their surroundings.

The American Chemical Society honored 14 of their members as a 50-year group, at their 115th meeting in San Francisco, last March. Our Sammy Sadtler was among the honored. Sam was born in 1873; graduated in 1895; served the United States Customs as chemist from 1895 to 1900; then became a consultant. He is author of *Chemistry of Familiar Things*, and is a charter member of the New York Chemists Club. Your Secretary was unable to attend the recent wonderful Convocation and Inauguration but kept in touch through the radio and the press. —LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

A formal meeting of the Class was called to order by the Secretary on April 2 at the Engineers Club, 96 Beacon Street, Boston. The following classmates were present: Ames, Damon, Davis, Dorrance, Driscoll, Gibson, Grush, Hedge, Howard, Mansfield, Rockwell, Rundlet and Smetters. There were 13 in attendance; 10 being necessary for a quorum. This meeting was the first since our 50th reunion at Osterville. A rising, silent toast was given in memory of our beloved Charlie Locke. The first item of business was to elect a Secretary and Assistant Secretary. Nominations for John A. Rockwell and Frederick W. Damon were seconded and passed by acclamation for these offices.

A resolution was passed pertaining to our class fund as follows: On and after January 1, 1951, to meet any possible contingency after the class organization of 1896 may have passed out of existence, this fund, both principal and interest, is to be relinquished to the Massachusetts Institute of Technology to be used in any way that the Administration may see fit and without any restrictions whatever. It is, however, hoped that unless some catastrophe or emergency should arise, it will be continued as an 1896 scholarship fund with the further provision that if future repayments of awards should tend to increase the principal of the fund all out of reason, these repayments may be considered as income, and, thus, available for additional awards. The amount of this fund, which is in the hands of the Institute Treasurer, amounts to $10,-391.31. The matter of a memorial fund in honor of Charles Locke was considered, and it was voted that this fund be known as the Charles E. Locke Memorial Fund, as of this date. — The Secretary presented a certified statement as of March 31 of the checking account at the Cambridge Trust Company of $416.21.

In view of the possible increase in demands for funds to worthy members of the Class, it was voted (following full discussion) to assess each member $2. The Secretary trusts that this notice appearing in The Review will make it unnecessary to go to the trouble and expense of sending out formal notices. Twenty dollars was paid in at the luncheon. From the cards sent out regarding this meeting, 104 replies were received.

Butler Ames and Charles Gibson sailed for Europe the week following the class dinner. — Partridge has transferred his hospital affiliations to St. Johns Episcopal Hospital in Brooklyn, N.Y. — The Rockwell Cage was put to excellent use during the Mid-Century Convocation and the Inauguration of President Killian.

We have received notice of the death of Malcolm H. McGann who died at his home, 60 King Street, Reading, Mass., on March 25.

Don't forget the Alumni Fund. Our Class should be among the generous donors. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, 275 Broadway, Arlington, Mass.

• 1898 •

Lester has conferred a further incalculable benefit on the Class in preparing the booklet describing the Golden Anniversary. In the vernacular, "Thanks a million, Lester." Those who attended the Golden will realize how trite and inadequate are these thanks to express our appreciation to Lester. Originality, ideas, enthusiasm, and, above all, the drive and ability to carry everything through to the finest detail and with unfailing courtesy. And now, the "Book of The Golden," a permanent record to be treasured!

Lester has envisioned, page 27, paragraph 2, further reunions; suggesting a 55th, a 60th, and even (hold your breath) a 75th. A 75th? Well, listen. Roger, in his address, "Looking Ahead Fifty Years," page 2, section (4), stated, "Experts . . . tell me that the average life of us humans could easily be extended to 100 years. . . ." Now, 100 years is beyond a 75th. George Treat, at the Algonquin Club dinner, page 26, paragraph 2, responding to the toast, "Till we meet again" prophesied a 100th reunion, "after another 50 years"; and Public Health Expert, Charlie Winslow, while doubting the possibility of a centenary reunion, stated that there was a good probability of a 75th. So, if all these luminaries agree, it may actually come to pass.

Dan Edgerly points the way. Our active Vice-president, who lives in Chicago when he is not traveling to Arizona, Florida, Mexico, or Guatemala, has made the following interesting study of the geographical distribution of the members of the Class. New England: Maine, 2, New Hampshire, 5, Vermont, 2, Massachusetts, 61, Rhode Island, 2, Connecticut, 5, total, 77; Eastern: New York, 25, New Jersey, 7, Delaware, 2, Pennsylvania, 8, Mary-

land, 4, District of Columbia, 3, Virginia, 1, West Virginia, 1, Alabama, 1, Florida, 3, total 55; Central: Ohio, 8, Indiana, 1, Missouri, 2, Michigan, 2, Illinois, 6, Wisconsin, 1, Iowa, 1, Kansas, 1, total, 22; Western: California, 12, Montana, 1, Idaho, 2, Colorado, 2, total, 17; Canada, 3, Europe, 1, total, 4; grand total, 175. Thanks, Dan, for this excellent study and the live statistics. Based on this study, we can arrange for an extension of the Secretariat of the Class; for an editorial board in each of the main centers. There are nine issues of The Review each year and the issues can be divided among the various centers. Thus, one month we would have news from the Central section; another month from New York; then from California, District of Columbia, Florida, Cincinnati, and so forth. The various editorial boards would just continue the sociability that they enjoyed at the Golden and pass it along through The Review, now going to every member of the Class, in living class notes.

And here's a new game to play. Take the various group photos enclosed in the book of the Golden and see how many classmates and wives you can identify. Then, take the key and figure out your average. Keep at it until your percentage is good. Thus, we can continue the Golden and build for the future. — And when you go traveling, and these '98 men seem to be on the move constantly, be sure to take with you the golden anniversary directory and be neighborly. Your call will be welcomed. Here are some new addresses: Frank F. Colcord, 2595 Devonport Road, San Marino, Calif.; Fred B. Cutter, 120 Institution Avenue, Newton Center 59, Mass.; Dr. Edwin W. Gehring, 284 Ocean Avenue, Portland 5, Maine; Professor Arthur L. Goodrich, 2526 North 32d Street, Phoenix, Ariz. (also M.I.T., Room 2-363, Cambridge 39, Mass.); Bryce Metcalf, 2118 Massachusetts Avenue, Washington 8, D.C.; Edward N. Milliken, 303 County Street, New Bedford, Mass.; William W. Rush, 4430 Clayton Street, Denver 16, Colo. Also, not in the directory, we are glad to welcome: Walter G. McConnell, in care of Terence J. McConnell, 53 North 7th Street, Newark, N.J., and Lamont Rich, who was with us at the Golden, 358 West Main Street, North Adams, Mass.

Two of the '98 travelers have recently reached home and we have this interesting letter from Bill Brewster, 2440 Kanawha Boulevard, Charleston 1, W.Va.: "Have just got back to the "smog" of the Kanawha Valley, after spending the winter in Florida. See that you were in Daytona Beach in January. I was there for several weeks in January and later, the first of April. Maybe you passed us in one of the cars with Massachusetts licenses at which my wife always exclaimed. I spent a month in Key West, stopping at Smyrna, Deerfield Beach, Palm Beach, and Hollywood on the way down or back. I agree with the President that Key West has the most equitable climate, no sudden changes to chilly winds as farther north. I also visited some of my former haunts in Cuba and went over highways I built more than 45 years ago. I found the rural country delightful. I will look forward to the next '98 reunion. We will all miss Charlie Wing, who was about the merriest at the 50th. If I can be of service in any way let me know. I hope to go to Plymouth again this summer." Thanks, Bill, for the letter and thanks for the offer to help. There are places for all of us. It takes many workers to prepare for a reunion, even, as you know, it does to build roads.

And so members of the Class of '98, and this includes relatives and friends as at the Golden, as many as can, foregather at M.I.T. the week of Alumni Day, and if you cannot possibly come, send a message for your classmates. — Edward S. Chapin, *Secretary*, 463 Commercial Street, Boston 13, Mass. Joseph C. Riley, *Assistant Secretary*, 9 Pond View Avenue, Jamaica Plain, Mass.

• 1899 •

The committee on the 50th reunion of the Class met immediately following the Convocation on April 2. In some cases these notes may not reach the reader until after the reunion; in which case, they will serve as a historical record of the event. Details and comments on our half-century get-together will appear in a forthcoming issue. At the present writing, it looks as if there will be about 60 members and guests present.

Fiftieth reunion program: Thursday, June 9, baccalaureate, Walker Memorial, 11:00 A.M.; class luncheon, Brookline Country Club, 12:30 P.M.; class day addresses, 50-year address by Stark Newell, 2:00 P.M.; class dinner, Hotel Sheraton, 7:00 P.M.; Friday, June 10, graduation exercises, Rockwell Cage, 10:30 A.M.; President's reception, Walker Memorial, 3:30 to 5:30 P.M.; Saturday, June 11, class luncheon, DuPont Court, 12:30 P.M.; President's tea, Senior House, 3:30 to 5:30 P.M.; Alumni Banquet, Hotel Statler, presentation of class gift, 7:00 P.M. — Burt R. Rickards, *Secretary*, 381 State Street, Albany, N.Y. Miles S. Richmond, *Assistant Secretary*, 201 Devonshire Street, Boston, Mass.

• 1904 •

The sources of news seem to have nearly dried up so our contribution will be short this month. By the time you read this you will have received final notice of the reunion at East Bay Lodge on June 24 to 26. If you haven't replied, sit down and do so now. The more who come, the better time we shall all have. Early replies will help us and the hotel management to make proper arrangements. Don't forget to send a contribution to the class treasury, even if you cannot come. An item of news about yourself would also be welcome. Cape Cod is beautiful the last of June, East Bay Lodge is a hospitable place, and all we need is a good attendance. This is up to you. Mail that reply!

Just after sending in the notes for the May Review, the following card came from Harold Leh who, you will recall, was quite a fencer in our day. "I am a widower and have no children. Had my hair trimmed very short in the apartment house contract business during the depression. Now happily located with the physics department of the University of Pennsylvania. What has the fencing team which we founded in 1902 been doing of late? Regards to all." The fencing team, Harold, has had a checkered career depending on the presence or absence of fencing enthusiasts. Just now it is rather quiet.

We regret to report the loss of another classmate. This time it is Albert Bee who died on February 13 at his home in Belvedere, Colo. He was born on August 11, 1882, in Dorchester, Mass., and prepared for M.I.T. at Mechanic Arts High. After graduation he practiced civil engineering, first with railroads, then in design and construction of engineering structures and tall buildings in the middle west. He was an active Christian Scientist and served as first reader at one of the Chicago churches. Mr. Bee is survived by his wife and also by a son and a daughter. They all have our sympathy. — Eugene H. Russell, Jr., 82 Devonshire Street, Boston 9, Mass. Carle R. Hayward, Room 8–109, M.I.T., Cambridge 39, Mass.

• 1905 •

It was not merely the dearth of class news which caused your Secretary to become a roving reporter. A new granddaughter in Houston, Texas, was the immediate cause of the trip, but considerable class news arose incidentally. Mrs. Goldthwait and I left Boston for Baltimore on March 20. Efforts to find Dave Bridges there were unsuccessful as he was visiting a daughter in Buffalo, N.Y. Tried to find George Whiting, I, at his office, also unsuccessful, but have, since my return, a letter from George stating that he was "out in the field" and did not get my message until after I had left. He adds: "You might be interested in knowing that I have been married twice, have two sons and a daughter and six grandchildren. I suppose you know that since 1910 I have been engaged in the heavy contracting business heading my own company, The Whiting-Turner Contracting Company, which was started by our mutual friend, the late LeBaron Turner, and myself. We have been very busy for the past few years but things are slacking up considerably now. I do not know wheather it is a lull or whether construction work will be permanently curtailed. My company does most everything in the heavy construction field and we have in the past few years started a separate organization on the erection and welding of steel storage tanks." I tried, also, to see Bill Sneeringer but outside of the statement that he came in the office only once every few months could get no information. Results in Baltimore, zero.

We left by boat Wednesday and enjoyed a wonderful three-day cruise out beyond the Gulf Stream, landing in Miami early Saturday morning, where by prearrangement Frank Webster, II, met us and drove us for hours through Miami Beach, out to Hialeah Park (no horses running, but plenty of beautiful scenery, flamingos, and so forth). Frank, who was with us at our 1947 get-together at Osterville, has since married. He seems extremely happy, although his business, mustard seed, was at the time quite inactive. Visited Frank's winter home at

Coral Gables, met Mrs. Webster and obtained their promise to be with us on our 45th. Back to the boat and on to Tampa, arriving early Monday morning.

There, also by prearrangement, we were met by Casey and Helen Turner, who had driven across from their new winter home at Vero Beach and we enjoyed another grand day around Tampa, Clearwater Beach and St. Petersburg. Our schedule called for a call on Clarence Gage, II, now permanently located there, but delays along the line made this impossible. By telephone, I learned that Clarence's old ailment, which had apparently been considerably aided by surgery in 1943 had "kicked up" and he was going somewhere for further repairs. He felt confident that he and Mrs. Gage would be present at our 45th reunion. Harry Wentworth had just left St. Petersburg for another Florida point, preparatory to hopping off to his summer camping grounds in Canada.

After another day's voyage across the Gulf of Mexico and up the Mississippi we docked at New Orleans. Looked up Bob Cutting, II, who seemed overjoyed as he apparently had not seen an '05 man in nearly 44 years. Bob, after several business assignments in the United States, spent several years in Australia, then to New Orleans, where he has been engineer-in-charge of river and harbor engineering and development from New Orleans to the mouth of the Mississippi. Anyone who has seen these 98 miles of traffic lane can realize the magnitude of this work. Bob had just returned to work part time, after being incapacitated by a thrombosis and diabetes, but with indomitable courage was sticking to Ole Man River. The following morning, Roy and Andrea Lovejoy, who were spending some time in New Orleans, incidental to Roy's annual visit to his N. O. office, picked us up and took us on a long and enjoyable tour of the city and environs showing us many of the high lights, Antoine's, Arnand's, and so forth. Since Andrea was born and had lived some time in N. O., we were privileged to see much of the old and elite New Orleans. There being no more '05 men in that city, we left sadly, but gladly to see on the morrow the very special grandchildren, the youngest Martha Jane, just three weeks old. Stopped on the way home at Evansville, Ind., and Dayton, Ohio (had to justify the trip by a visit to the factory I had represented more than 30 years) but no '05 men, therefore no more news.

The rest is less personal. On arriving in Boston I found a message from Pete Harvey's secretary to the effect that Pete, just prior to his intended start to the "big doings" in Boston and Cambridge, had had an attack of herpes zoster (shingles to you) which settled in the optical nerve on the right side and became very serious. Specialists saved the sight of the eye, but ordered him to his home in Santa Monica, Calif., for a considerable period of recuperation. Good luck, Pete, and for Pete's sake, take it easy for a change. Harry Gabriel (address, 5034 Oberlin Boulevard, Cincinnati 29, Ohio) writes as follows: "I admire your persistence in your efforts to get the news of the Class. I feel thoroughly ashamed of myself for not responding long before this and I ask your forgiveness. After various engagements in Alaska, Argentina, Uruguay, Bolivia, service in World War I, missions in Czechoslovakia and Poland, I spent 23 years with the bridge division of the New Jersey State Highway Department. Resigning there last summer, to take advantage of my pension rights, my wife and I moved to Cincinnati with the thought of retiring. I found that this was easier said than done, so in October I secured a position in the county engineer's office, in charge of a bridge project. This, at least, serves to keep my mind functioning and although there is a lessening of responsibility; nevertheless, I am in a happy frame of mind being out in the open air and in perfect health. The Mrs. is homesick for the east and we may return to the outskirts of New York this fall."

Something special. At the ripe age of sixty something, Sam Shapira, III, becomes a grandfather for the first time, Carla June Marie Shapira, having been born to son Norman, M.I.T. '41, on March 12, 1949. While at Houston, Texas, I learned from my daughter that Margaret Whitcomb, youngest daughter of Ralph Whitcomb, herself an S.B. at M.I.T. '39 and S.M. '40 had married Fritjof Raven, Assistant Professor of Modern Languages at the Institute. Her older sister, Sally, (now Mrs. Martin) lives in Oklahoma. Haven't heard from Ralph for many years. The Weymouth, Mass., *Gazette* in announcing the appointment of George W. Perry, XIII, to membership on the National Committee on Financing Development of M.I.T., states that George has served for 30 years on the Weymouth Board of Water Commissioners, is president of Weymouth Light and Power Company, president and general manager for Quincy Electric Light and Power Company, and a director of the Granite Trust Company. Pretty good for a naval architect.

Ever hear one of Bill Ball's stories? Here's a good one. Bill has retired, as follows: "Just a line to advise you of my retirement as chief adjuster of the Associated Factory Mutual Fire Insurance Companies on April 1. Have been with this fine organization since March 7, 1922, and have watched it grow from about $6,000,000,000 of insurance to over $31,000,000,000. It owes its great success to the mutual co-operation of its members in the prevention of losses. In other words, the old adage still applies, 'An ounce of prevention is worth a pound of cure.' Getting back to more personal matters, I was elected a director last fall of the Power Condenser and Electronics Corporation. This is a Massachusetts corporation, and it owns the basic patents covering electrolytic condensers, a device of relatively cheap cost, which will effect savings of approximately 20 per cent current, when applied to A.C. motors. It corrects the 'power factor.' Does that stir up old memories?

"A research laboratory and pilot plant are being set up in Washington, to complete the refinements necessary before licenses will be issued to selected manufacturers who will manufacture and market the condensers. The laboratory will be under the direction of J. E. Lilienfield, inventor of the condenser, and one of the world's most famous physicists. Harold J. Power, President of the company, is a pioneer in broadcasting, having started the old station at Medford Hillside. You remember Bob Emery and his ukulele which you got on your little set by juggling a cat's whisker on a galena crystal? Life was simple in those days and so were the radio sets. The Doctor and Harold Power make a great team which assures the success of the company. The same principle can be applied to insulating wire with a metallic coating which may turn out to be even bigger than the condenser.

"Am finishing a little home on the Cape not far from East Bay Lodge, so there will be no excuse for my not attending future '05 reunions if they continue to be held there or at some other location nearby."

And as a postscript a few days later he adds, "A few days ago I sent you some news about myself, one of the rare occasions that I have written to you, and I wish to add a little. Speaking of the 'metallic coating' I should have said 'dielectric coating.' It is a coating of aluminum oxide deposited electrolytically, (tough word to spell) on the wire. The latter is for your information as the only change was changing 'metallic' to dielectric. One thing more. J. C. Balsbaugh, a professor at M.I.T., is our research consultant. Talked a few minutes last night with Carl and Carrie Danforth. They have just returned to Bangor from Florida. Carl, as you know has not been too well for some time but his voice sounded quite natural."

Our chief assistant news gatherer, Andy Fisher, was on the job during my absence, covered the Churchill-Stassen-Killian affairs, reports seeing Jim Barlow and son, Mr. and Mrs. Gib Tower, Mr. and Mrs. Harry Donald, Bob McLean, Court Babcock ("he was in a tuxedo, so his wife must have been with him"), and Charlie Johnston, but he couldn't get a quorum for a clam chowder at 6 Copeland Place. Evidently, the other attractions interfered with his gastronomic specialty. Walter Eichler, II, retired, is now living at Box 484, Harwichport, Mass., near enough to attend a reunion sometime. Warren Wells, III, has moved from Evanston, Ill., to Rural Route 1, Altus, Ark. Frank Chesterman is now in semi-retirement at Hampton Falls, N.H.

From time to time question has been raised as to the availability of a 1905 *Technique*. One has been turned in and is available to the first one applying. Price, one good news letter. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 69 Newbury Street, Boston 16, Mass.

• 1906 •

Although no class affair was scheduled at the time of the Mid-Century Convocation, quite a number of the Class were present at the various events which were included in the outstanding program. The Secretary and Frank Benham attended the Convocation on Thursday, March 31, the panels on "The Problem of World Production" Friday morning and

"The State, Industry and the University" in the afternoon. They also attended the Inauguration on Saturday, April 1.

The Secretary and Mrs. Kidder had excellent seats in the Stadium at the Garden meetings and were in a position to view practically the entire audience but, try as hard as we could, we were successful in locating but one '06 couple, Sherman and Mrs. Chase. Milling around at the reception at the Statler, we met G. Burpee, Jim Wick and Terrell Bartlett. Stewart and Mrs. Coey were present but we had no luck in finding them. In fact, the Secretary made a definite date to meet Stewart at the Inauguration exercises but, as in the case of the other events, the audience arrived very early and the seats were filled so rapidly that it was practically impossible to locate acquaintances in the gathering. W. G. Abbott and M. J. Gibbons were encountered at the luncheon in the Armory on Friday. Riding home from the Garden meeting Friday night with Frank and Mrs. Benham, we drew up to the curb on Friend Street to hail Terrell Bartlett who was with his niece, Storrow Casson, and Paul Critchlow. Benham, Bartlett and Critchlow were all Course I men. Those who attended the 1946 class reunion will remember Miss Casson as one of the sisters who accompanied Terrell and Mrs. Bartlett to the reunion. Storrow is now a junior at Wellesley. The Secretary was with Bartlett, Benham and Critchlow at the Inauguration and after the exercises saw Carroll and Mrs. Farwell. In a telephone conversation with Charlie Kasson a few days after the Convocation he advised that he and Mrs. Kasson also attended the Saturday morning exercises. The Convocation register, which was signed voluntarily by Alumni, included the name of C. S. McGinnis.

The Secretary regrets to report the death of John J. Donovan who died in Oakland, Calif., on Friday, March 18. Donovan was a native of North Andover, Mass. He found it necessary to go to work in the textile mills at Lawrence, Mass., at the age of 14 because of the death of his father. Later he became a bricklayer. At the age of 23 he was foreman of the brick work on a project at Phillips Academy, Andover, Mass. The following year he returned to the Academy as a student. After his studies there he entered Technology and was graduated in our Class as an architect. He went to work in New York with Ernest Flagg who was working on the Singer Tower, in its time the tallest building in the world. In 1911 he went to Oakland, Calif., to supervise the city hall project. After that he was assigned to the municipal auditorium project and school work. Also, he was one of the three consulting architects for the Bay Bridge project. From 1919 to 1933 he was a member of the State Board of Architectural Examiners and served two years as its president. He was architect for the Technical High School, St. Mary's College, several buildings of Santa Clara University, and the College of Notre Dame at Belmont. Besides his activity as an architect, Donovan was president of the Universal Window Company, manufacturer of a school window which he invented. In April, 1948, he was honored by a testimonial dinner attended by more than 60 persons including some of the men who had known him since he went to California in 1911. He is survived by his widow, Mrs. M. E. Donovan; a son John J. Donovan, Jr., of Berkeley; two daughters, Miss Dorothy Donovan of Oakland and Mrs. Roger Stevens of Piedmont; and two sisters. The Secretary acknowledges the interest of H. W. Gardner'94, who is a former professor of Architecture at Technology now retired, in forwarding a clipping concerning Donovan's death. Professor Gardner's note included the following postscript: "Donovan was one of my favorite students and a most unusual man." The Secretary also acknowledges a letter from Bob Clark who is in Berkeley, Calif. Bob also forwarded the notice of Donovan's death. Extracts from Bob's letter follow: "Although Jack and I had lived in the same town for many years we had seldom met, but from time to time I had seen mention of him in the news. As for myself, there isn't much to report except to say that when I was in Boston for one day last June I made some very earnest efforts to locate some of my former cronies in the Class, only to learn that each and every one was out of town or at least not where I could reach him by telephone. However, I did talk with Ralph Patch by telephone for a few minutes, but did not have a chance to see him. I haven't yet retired, but when I do perhaps I ought to go to Boston and park there for two or three months, devoting all my time to unearthing my old friends. By some such method I might ultimately have better luck than has been my lot up to now. In the meantime, should any of the faithful chance to be in the San Francisco Bay region, I would be delighted to hear of their presence in time to be able to do something about it." — JAMES W. KIDDER, *Secretary,* 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary,* 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

Richard C. Ashenden whose correct mailing address is now at his home at 95 Fair Oaks Avenue, Newtonville, Mass., wrote to me in April accepting my invitation to help us at our coming reunion at Oyster Harbors Club by taking charge of the golf competition, and saying that in June of 1948 he sold one of the two businesses of which he was the head and that his son (M.I.T.'31) practically runs the other, so that he is to all intents and purposes retired from active business. Dick has for many years been president of Boston Nickel Plating Company and also of L. L. Rowe Company, the latter concern being a manufacturer of soda fountain accessories. — Jim Barker wrote to me on April 17 saying that he was expecting to leave for Iran again before the month was over. Jim had written that he probably would attend our coming reunion, but he now is doubtful as to whether he will be back in the United States in time to be with us. — Bill Coffin, who is senior partner of Sturgis Associates, architects, at 120 Boylston Street, Boston and whose home is at Powder Point, Duxbury, Mass., wrote to me on March 18 saying that he plans to attend our reunion and also giving me some interesting news as follows: "Mrs. Coffin and I have been home about a week after a seven weeks' trip by rail around the United States, anticlockwise, so to speak. On the way to Seattle we stopped off at St. Louis; Burlington, Iowa; and Chicago. At the latter city we saw Sam Marx for about half an hour in his swagger modern apartment with walls hung with paintings by Matisse and Picasso. At Seattle we were taken in hand by Floyd Naramore for two days and escorted all over that spectacular city. The weather was cold and clear with four or five inches of snow on the ground. Like San Francisco, the city spreads over several abrupt hills from which the view across the deep blue of Puget Sound to the jagged white peaks of the Olympic Range was quite out of this world for an American city. We spent several days in Portland, San Francisco, Santa Barbara, and Claremont, Calif.; then took the train from Los Angeles to New Orleans, where we stopped at a hotel in the old French Quarter. A final week aboard a friend's cruising boat on the inland waterways of Florida on the east coast completed the vacation before hopping a train for home and back to work."

On April 14 I received a letter dated March 2, 1949, from Birendra C. Gupta, whose present address is Ponoma I, Darjeeling, West Bengal, India, from which I quote: "Thank you very much for your most impassioned appeal to the Class of 1907 to augment the income of M.I.T. I have been between 'the devil and the deep sea' with regard to my obligation to the Institute on the one hand, and to my poor country on the other. I have not contributed anything in all these years to the Alumni Fund, not because I did not love M.I.T. or did not want to do my share for her advancement and welfare, but because my very poor country needed every copper that I could spare. The United States of America is the wealthiest country in the world and has a population of 130 millions; India is one of the poorest countries in the world and has a population of 400 millions. As an educationist, I have done my share to raise the unbelievably low standard of living and education in my country. What I could contribute to the Alumni Fund would not raise a ripple in the pond, but the same amount spent in this country would show a modicum of results. In these days of financial stringency in India I am not allowed to export money out of the country to sterling or dollar areas. I am now retired from active work; I am 68 years old and have settled down in Darjeeling in our own home which we built about seven years ago. We visit our three daughters who live in different parts of India during the three cold weather months. I have been completely checked up by Army specialists at Poona and my heart, which was giving me a bit of trouble, has been made O.K. again. My second son-in-law, Lieutenant Colonel A. K. Dev, is a surgical specialist and is commanding the surgical division at Poona, the largest military cantonment in India. We have spent two-and-a-half months at Poona where the all-the-year-

round climate is perfect. Poona cantonment and Poona city combined have a population of 900,000 with an elevation of 2,000 feet above sea level. I hope you are all quite well. My best regards to my classmates and to M.I.T."

John H. Leavell has changed his business address in Tulsa, Okla., to 312 Howard Building, 424 South Cheyenne Street. — Albert F. Stevenson has left the employ of the Borden Company in New York City and is now practicing as a consultant in food technology, his home address being 240 Lotte Road, Ridgewood, N.J. — Last February I received word from Roland H. Willcomb saying that he had moved from Helena, Mont., to 1513 Central Avenue, Great Falls, Mont. As the result of my writing to him requesting information, he wrote to me on March 23, and I quote from his letter: "You were correct in recording my recent assignment as administrative aid and commission secretary to the State Highway Commission of Montana. We had a state election last fall, and we have back in power a group that was defeated in 1940, so the process of reinstating the key men in that group began soon after January first. I had been entrusted with rather unusual responsibilities under the Highway Commission and was one of the first casualties. So at the moment I am back in private life with no professional status or even plans. I moved back to Great Falls late in January, and I am just now pinch-hitting for a photographer friend of mine who became ill shortly after my arrival. He and I have been associated in collecting a fine group of photographs of outstanding Blackfeet Indians. So, for the past six weeks I have been spending my time between making photographs for school annuals and the darkroom, quite an easy and, may I say, pleasant transition from the political bickerings incident to public work. . . . About 30 of my over 40 years of ceaseless employment since leaving Technology have been in public service, and time after time I have witnessed, and occasionally suffered, the despicable treatment accorded the engineering profession by the politicians. . . . You mention my family. My mother, 86 this May, is still living and is with my sisters in Akron, Ohio. The old home at Ipswich, Mass., was disposed of long ago. My four daughters have married. One was widowed by the war; she and her two boys have been living with us since her husband joined the Navy in 1943. We have seven grandchildren. Bess and I are mellowing into old age with reasonable comfort and good spirits. Her mother is also still living, a spry little lady of 85. Your interest in keeping track of us mavericks brings a feeling of warmth to our old hearts, although I guess we don't do much to show it."

Come to our reunion, June 24 through June 26, at Oyster Harbors Club. Mail your reply coupon to me *now.* — BRYANT NICHOLS, *Secretary,* 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary,* Commonwealth Shoe and Leather Company, Whitman, Mass.

• 1909 •

We were sorry to learn that in January Ken May, VI, spent two weeks in the Newton-Wellesley Hospital recovering from an operation and had scarcely arrived home before he returned to the hospital for another operation. He states, however, that he has nearly recovered and is in fine shape. "Hospitals are great places to be in when sick, but I was glad to get out and home again and get outdoors for daily walks. I imagine it will be a while yet before I get back in town for a full day's work. Frances and I now have eight grandchildren (six boys and two girls). Our older daughter, Margaret M. Harwood, lives with her husband, Henry Harwood, and four sons and a daughter in Waban, only 15 minutes walking distance away. Our second daughter, Elizabeth M. Dorer, lives with her husband, John E. Dorer, and one son and a daughter in Snyder, N.Y. Our only son, George B. May, and his wife, Ann James May, live in Hartford with their son. Frances and I rattle around here except when we have frequent visits from our children and their youngsters. You can well imagine the good times we then have." We hope that Ken will be able to make the reunion.

We have recently received a paper reprinted from the February, 1949, *Balance Sheet,* "What is Happening to Our Insurance Market?" by Dwight Sleeper, VI, who is chief consultant, Insurance Buyers' Council, Boston. He states that many companies are having difficulty in obtaining the coverage that they require and that, as a matter of fact, insurance is now in a sellers' market. These conditions are the results of our many current conditions, such as dollar inflation of property values and business earnings, and the many uncertainties that now prevail.

We have learned that Tom Desmond, I, is the author of an article, "Don't Let Leisure Trap You," appearing in the April, 1949, issue of the magazine *Best Years.* — George Bowers, I, who lives in Lowell, Mass., states that he entered the Massachusetts General Hospital shortly after Alumni Day, nearly a year ago, for an operation, and has not been able to be around too much since then. He has been busy, however, in contacting classmates in the Boston-Lowell district, endeavoring to interest them in the class endowment fund. He hardly expects to make the reunion. We wondered why he was absent from Alumni Day last February. He's been attending ever since we can remember.

Although these notes are written nearly two months before the reunion, they have undoubtedly arrived just a week or two prior to it. In the meantime, you will have received another letter from the reunion committee giving the final details as well as means for making reservations. As a matter of fact, these details don't mean that we are planning any entertainment or other schedules, but are only arranging the bare essentials necessary to bring us together at Osterville for an informal good time. There will be golf for the golfers, piazzas for those so inclined, and George Emerson, XI, has written from Hartford, Conn., asking us to "provide a few wheelchairs for the lame and decrepit." Above all don't stay away just because you haven't sent in a return card or notice. The Lodge is able to take care of all comers right on the spur of the moment, so don't hesitate to talk other classmates into coming. Last month we listed a few of the long-distance commuters and just recently another has been added. Haylett O'Neill has written from Houston, Texas, stating that he and Ethyl are not only planning to come to the reunion, but also to Commencement and Alumni Day.

We also hope that Molly will be able to make a cheerful announcement of the result of the efforts of his committee in raising the class endowment fund. By now you should have received Letter Number 5, and the needs of the Institute and the different plans by which contributions can be made have been described. Let's show our gratitude to the Institute for what it has done for us by a generous pledge or contribution.

We need say little of the big Convocation at which Winston Churchill and Harold Stassen were the two outstanding features, followed by the inauguration of Jim Killian as the Institute's new president. These events already have been described in The Review. However, the Class will be interested in knowing who of '09 were in attendance. In the lobby near the registration desk was a bulletin board on which were registration sheets for all the classes with the request that those attending sign up. Following are those of our Class who registered: Phil Chase, VI, Philadelphia; Chet Dawes, VI, Cambridge; George Gadsby, V, Salt Lake City; Leon Healy, V, Milwaukee; Francis Loud, VI, Boston; Ramon F. Munoz, III, Monterrey, Mexico; Claude Wilson, I, Waterbury, Connecticut. However, many who came did not register so we have no complete record but the following came to our attention either by personal observation or by mere rumor: Johnny Davis, II; Tom Desmond, I; Brad Dewey, X; Ben Pepper, I; Molly Scharff, XI; Art Shaw, I; Chick Shaw, V; Henry Spencer, II; George Wallis, II; Mex Weill, II; Paul Wiswall, V. We know that we must have missed some and perhaps some of the above weren't there. Many of the "Mrs." also accompanied their husbands but we have no authentic records. In the Great Court, where former President Compton and current President Killian addressed the overflow, we had the pleasure of meeting Marion Jones and Reg, Jr., who had attended the Churchill and other meetings.

Last month we included a letter from Art Morrill, XI, who is in China. We have heard from him twice since that time, due in part to the fact that he is assisting a friend of his, a Chinese engineer, to find opportunity to do graduate work in electrical engineering in this country. Conditions are changing so fast in China that when these notes appear they may be entirely different. In any event he says: "Conditions in Shanghai are peaceful and pleasant enough, at least for me, in spite of what you read in the newspapers. Last November and December a great many foreigners left town and we thought we might have to go, too, if there were disorder. There is still an American cruiser sitting in the Whangpoo within sight of my window, but we now think there is practically no chance that we will have to get onto it. For the long run I still think

that China is a great country and that there is a great deal of interesting work to be done here in the next few years." When we advised him that Dean Fair of the graduate school of engineering at Harvard stated that his secret service had reported that Art was doing a magnificent piece of work at considerable sacrifice, Art replied: "I am interested to hear of Dean Fair's 'Secret Service.' I hope that we are doing a good job but tell him that his spies are in error about the sacrifices. The principal reason I am in China instead of America is because it is much more fun. I wrote to a friend recently that the civil war situation was perfect. It was not dangerous enough so we were much scared and not safe enough so that we were bored. We got glowing reports in Shanghai newspapers of the M.I.T. Convocation at which Churchill spoke. There were two or three columns of details about his speech but it must have been much more exciting in live delivery." — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

• 1911 •

Hats off to Bun Wilson! A news dispatch from Pittsburgh in early April gives the glad tidings thus: "I. W. Wilson (XIV), vice-president in charge of operations and a director, has been named senior vice-president of the Aluminum Company of America. Mr. Wilson became associated with Alcoa in 1911 after graduating from M.I.T. He was made vice-president in 1931 and director in 1939. He also is vice-president of American Magnesium Corporation, a wholly-owned Alcoa subsidiary."

In a note of appreciation of my congratulatory note, Bun wrote: "It was a great disappointment to me that I could not get up to Cambridge for the inauguration of Jim Killian and the accompanying festivities. I have been and am tied up with the next action in the government's antitrust suit against Alcoa and have no opportunity to do any of the many things I would much prefer doing. I fear it is also very doubtful that I will be able to be in Cambridge and Boston for Alumni Day and if I cannot make it in person I will certainly be there in spirit and will appreciate it if you will so assure all those who are more fortunate and will be there."

We had a fine representation of classmates at the Mid-Century Convocation and although it may very well be that I did not personally see some who may have attended, I personally was able to count up to 38 ('11 always gets in the act, you see, for three and eight make 11!) of the 1911 family.

Fourteen of us were accompanied by our wives: Monk deFlorez, II; Dennie Denison, VI; Carl Ell, XI; Gordon Glazier, VII; Stan Hartshorn, X, with his son also present; Jack Herlihy, II; Charlie McManus, I; Roy MacPherson, II; Bill Martin, VI; Carl Richmond, I; Nat Seeley, II; O. W. Stewart, I, and Ted VanTassel, X. Walter Allen, XIII, and Hal Robinson, I, had their sons with them and the stags included: Cal Eldred, VI; Liv Ferris, VI; Joe French, IV; C. R. Johnson, X; General George Kenney, I; Charlie Linehan, I; Gordon Wilkes, II; and Aleck Yereance, I.

Distance honors went to George Kenney, who flew up from the Air University in Alabama and Joe French, on from Detroit. Distance means so little today, though, for having said *au revoir* to George on Friday, April 1, Sara and I were listening to "This Is Your Life" on the radio the following Tuesday evening and the life of Merion C. Cooper, movie director, was being dramatized from Hollywood, when suddenly the booming voice of "our George," for whom Cooper had flown in the War, came on with words of greeting to Cooper. He had flown to Hollywood as guest of the sponsors at a party in Cooper's honor after the radio show, at the Roosevelt Hotel, Hollywood.

Harry Tisdale, V, my favorite news hawk, sent a clipping later that week advising that "The Gen. William E. Mitchell Memorial Award will be presented by Aviators' Post 743, American Legion, to Gen. George C. Kenney at a dinner in the Savoy Plaza Hotel on April 28, in recognition of his development of the Strategic Air Command." Congratulations, George!

Add Junior Elevener romances: At an engagement party, Saturday, April 2d, at Kingston, Pa., Mr. and Mrs. Kenneth Alfred Lambert of Kingston, Pa., and Beach Haven, N.J., announced the engagement of their daughter, Jean Alice, to Donald Read Stevens, Jr., of Trenton, son of Mr. and Mrs. Donald Read Stevens of Woodland Avenue, Ridgewood, N.J. Miss Lambert, according to the Ridgewood Sunday *News*, was graduated from the Wilkes-Barre Day School and is a senior at Wellesley College. Mr. Stevens is a graduate of New York Military Academy and M.I.T., Class of 1943. He was a lieutenant (senior grade) in the Navy and was on active duty in the Pacific area for three years. He is an electrical engineer with John A. Roebling Sons and Company, Trenton.

The timing on this event was a bit unfortunate from a 1911 standpoint for it meant Don and Lois couldn't get up to the Convocation and Inauguration that same week end. We missed you both! In a note from Don, however, I got a bit more "Junior Elevener" news. Gordon Wilkes and his wife have a new grandson, putting them on a par with Sara and me — two grandsons and two granddaughters. It was sad, however, to also learn that Wilkie's brother, Kneeland, died of a heart attack this spring. Another note of cheer from Don, however, was the report that Rufe Zimmerman, IX, U. S. Steel vice-president, with offices in Pittsburgh, is convalescing satisfactorily at his home in Short Hills, N.J., after a hospital siege.

Here's one for the book: I stupidly accepted a clipping from The Review office announcing the appointment of Ralph Damon as president of Trans-World Airlines after having resigned as president of American Airlines, believing him to be our Ralph Damon, I, who lives at 195 Eliot Street, Milton. Was my face crimson about April 10 when a letter from Emmons Whitcomb, X, informed me that I had "Damon of our Class mixed up with a Harvard man of 1918." Whit also enclosed a clipping about the honor to be paid George Kenney in New York April 28 and closed with two interesting paragraphs concerning himself (he is with the University Travel Agency in Harvard Square, Cambridge, you know): "Last January and early February I spent another couple of weeks in Puerto Rico in connection with the Puerto Rico case of the C.A.B., then in March two weeks in Washington at the hearings there of the same case. This all has to do with the need of competitive air service between New York and San Juan. More recently I have been made chairman, Educational Travel Advisory Board of the American Society of Travel (national organization of the travel industry) and on April 5 was again in Washington to appear before a Senate committee supporting Senator Flanders' resolution for more steamship accommodations to Europe for students. All in all, kind of busy, but having a lot of fun"!

Post cards at hand in mid-April tell of the meanderings in foreign lands of two classmates. Willson Stamper, I, of Newark, N.J., sent a picture of the University of Glasgow from that Scottish city with the message: "Sorry to have missed seeing you at luncheon in New York last January. This postal will explain the reason. Am flying back to the U.S.A. in early April." From Buenos Aires in the Argentine came a card picturing Government House there, with an 11-word message from Jim Duffy, VI, our Chicago business engineer, who can say in 11 words what it takes most of us 11 sentences to say: "Down here having fun and it is very easy to find."

Well, mates, study the final figures of Alumni Fund IX — we dood it again! 1911: second in per cent of quota (contributors), our 152 contributors giving us 126 per cent quota (1891 had 127 per cent) and sixth in the amount column percentages, our $3,375 being 120 per cent of our quota. We still have 95 members in the "100 per cent Club" — subscribers to all nine of the funds to date. A grateful class agent expresses once again deep appreciation to you faithful classmates who are supporting the Alumni Fund — let's keep up the good work and also do our share in insuring the success of the M.I.T. Development Program.

Stan Hartshorn and I attended the spring dinner of the Worcester County Alumni Association of M.I.T. at the Sheraton in Worcester on April 19 and met Hal Robinson there. I gave my clubmates a résumé of the Mid-Century Convocation and the inauguration of President Killian, at which I had the honor of marching in the honor guest division of the inaugural parade.

Dave Allen, II, has announced his retirement and after many years of service with the Washington Gas Light Company in the Nation's Capitol, is now taking things easy at his place on St. Leonard's Creek in Lusby, Md., a Chesapeake Bay town about 50 miles southeast of Washington. Two address changes: Lloyd Cooley, X, 7861-B South Shore Drive, Chicago 49, Ill.; Paul Cushman, VI, 1212 Marlboro Lane, Nichols Hills, Oklahoma City 6, Okla.

See you at lunch in the Great Court at M.I.T. on Alumni Day, Saturday, June 11 – there's that '11 again – and later at the Banquet at the Statler in Boston. Hereof fail not, if you are able to attend! – ORVILLE B. DENISON, *Secretary,* Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary,* 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

A special and unexpected attraction for '12 men attending the Mid-Century Convocation was the buffet dinner given by the Fred Shepards at their home on Chestnut Street in Boston on Friday, April 1. The event began early in order to permit as much time as possible for sociability before leaving for the Stassen address. Those present were Fred and Mrs. Barker, John and Mrs. Barry, Harvey and Mrs. Benson, Albion R. Davis, Milton and Mrs. Kahn, Harold and Mrs. Manning, Wallace and Mrs. Murray, Johnny and Mrs. Noyes and daughter Priscilla, Aksel and Mrs. Pedersen, George M. Sprowls, Robert C. Stobert and Lester and Mrs. White. The gracious hospitality of the Shepards in their lovely home made it a most memorable occasion. Fritz regretted that he had been unable to get in touch with and invite the other '12 men who registered on the bulletin board: Carlos P. Echeverria, Charles A. Cary and Philip W. Dalrymple.

As these notes are being written, the June reunion is some weeks distant, but it will be all over before you read them. Under the circumstances, there is not much to be said on the subject beyond: "Hope to see you there." – FREDERICK J. SHEPARD, JR., *Secretary,* 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, *Assistant Secretary,* 4520 Lewiston Road, Niagara Falls, N.Y.

• 1914 •

Recent events have been outstanding in the history of the Institute. Both the Convocation and the Inauguration have been well covered in other columns of The Review so that no further mention need be made here of those great events. There were many classmates present, but the total numbers attending the meetings were so great and so many committee meetings were scheduled for those who had been working on the program in one way or another, that your Secretary saw only a very small number of 1914 men reported to be present. There seemed to be no free moment on the program when it would have been possible to try to arrange for a formal Fourteen meeting, so none was attempted. We will all have to look forward to our own reunion in June for this get-together. There follows a list of persons who were seen by someone or other in the Class: Aldrich, Blakeley, Calver, Dinsmore, Fiske, Hadley, H. H. Hall, L. S. Hall, MacCart, Mayo, Morrill, Morrison, Ober, Parsell, Peaslee, Richmond, Sutherland, Turner, and H. S. Wilkins. There were probably many others present, and your Secretary apologizes to them for not including them in this list.

Alumni Day will be held in Cambridge on June 11. It is expected that there will be a number of local classmates attending, but we are not going to arrange for any formal meeting. It is quite probable, however, that we will have an informal get-together before the dinner. Our own big event is now well known to you. It is, of course, our 35th reunion being held at Pine Orchard, Conn., June 17 through June 19.

With all the festive events that took place recently, a very heavy shadow passed over the Class as we lost by death two very loyal classmates. They were Malcolm C. Mackenzie, who died very suddenly of a heart attack on March 31, and Admiral Thomas B. Richey, who died on March 30. Both of these men were somewhat older than the average of our Class, and Admiral Richey had an affiliation with the Naval Academy. Both, however, were very regular attendants at our five-year reunions, as well as at local dinners. Their interest in class affairs was unexcelled.

Admiral Richey, or Tom as he was called by his many friends, came to the Institute as a student in Naval Architecture, having previously graduated from the Naval Academy in 1909. As was customary for the Naval constructors, he received his master's degree at the time the rest of us received our bachelor degrees. Tom served in various capacities, but almost entirely in the production field. For many years he was at the Brooklyn Navy Yard, in charge of construction there. The early part of the war was spent in Norfolk, where he was also in charge of construction. Later, largely because of ill health, he was transferred to Washington, where he was associated with the Joint Chiefs of Staff. Your Secretary had the pleasure of seeing him in Washington many times during the war. He was retired in 1945. He then returned to New York, where he became an engineering consultant for the Cargoaire Engineering Corporation, with which organization he was associated at the time of his death. Some months ago, it became necessary for his wife, who had become an invalid, to be transferred to a sanitarium in Connecticut. Tom then made his headquarters at the New York Yacht Club, where he died. His death was caused by the condition that had bothered him for the last few years and had resulted in his retirement from the Navy. In addition to his wife, he is survived by a son and a daughter.

Mac, as we knew Mackenzie, came to the Institute to teach machine drawing. He combined his instruction work with supplemental studies, eventually graduating with our Class. He thereafter affiliated with our Class. Mac attended practically every one of our reunions and was always enthusiastic about the various meetings we have held from time to time in Boston. After being on the Institute staff for many years, he moved to Derry Village, N.H., to head a woodworking organization there. This move in no way deterred him from attending the meetings in Boston, and he regularly drove down and back the same evening in order to be with the Class. Mac had had no previous warning of his illness, and after a somewhat strenuous day he died very suddenly from a heart attack. He is survived by his wife.

Word has also been received of the sudden death, by heart attack, of Mrs. Muzzey, the wife of Clifford Muzzey. She had gone from her home in Lexington, Mass., to Cleveland to visit her sister when she had the fatal attack.

Ernest Crocker has tried to outdo Frank Ahern in some of his traveling experiences. In connection with his work with Arthur D. Little and also as chairman of the New England section of the American Chemical Society, Crocker has made a big tour around the country, stopping at several places on the West Coast to give talks. Crocker is quite an ardent flying enthusiast and by means of air travel has been able to condense a most strenuous trip into an unbelievably short period.

In one of his recent columns, Drew Pearson writes this of Alden Waitt: "Maj.-Gen. Alden Waitt, a good chemical corps commander, is a passionate devotee of cleanliness." There is quite a story behind this, and perhaps we can get Alden to tell about it at the June reunion. It has to do with what Alden found to be inadequate facilities in the Pentagon.

After a silence of many years, your Secretary has received a letter from Admiral Tatsuo Furuichi, who writes from Tokyo. He resigned his position as vice admiral of the Japanese Navy in 1937 and became associated with the Tokyo Shibuwra Electric Company which had connections with the General Electric Company. He writes further that because of war conditions he is currently unemployed but is hoping to do some importing from the United States. He hopes also to be able to visit the United States again in the not-too-distant future.

Looking forward to seeing you all at Pine Orchard on June 17. – H. B. RICHMOND, *Secretary,* 275 Massachusetts Avenue, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary,* 1775 Broadway, New York 19, N.Y.

• 1915 •

Our 1915 Class Flag hangs sorrowfully at half-mast for the death of our popular and well-known classmate, Ken Kahn, described in Ray Stringfield's letter: "It is our sad duty to record the passing of one of our good classmates, Kenneth D. Kahn. Kennie, as you know, was process engineer for Lockheed Aircraft, and with his wife, Minnie, had driven to Dallas to attend to company business and intended to stop at the Grand Canyon on his way back. Just a few miles west of Amarillo, early on the morning of April 1, their car apparently struck an icy spot in the road, skidded, and rolled over several times. Kennie died on the way to the hospital and Minnie will be in Northwestern Hospital in Amarillo for several weeks with a dislocated vertebra and broken collar bone.

"Bill Mellema, Walt Rivers, Francis Boynton and I were able to attend the services, which were held in the beautiful Church of the Recessional at Forest Lawn in Glendale on April 7. Kennie had always mixed printer's ink with his chemistry (you remember he was managing editor of *The Tech*), and in addition to his work at Lockheed, edited *Scalacs,* the regional bulletin of the Southern California section of the American Chemical Society, and was also Southern Californian correspondent for *Chemical Engineering.* Just last

week in San Francisco, the western editor of the latter was telling me that he didn't know where on earth Kennie got all the information that he fed into them. But Kennie always enjoyed life and liked people, and while his place is going to be hard to fill in all of his various activities, it is those of us who have enjoyed the chats around his fireplace and the steaks from his barbecue who will really feel his loss most keenly. He leaves a brother, Donald, with whom he was associated in construction work for 20 years, a son, Kenneth, Jr., who has just graduated from U.C.L.A., and a daughter, Adele, who is a senior at Pomona College." We have written to Mrs. Kahn expressing the sympathy of the Class to her and her family.

Will P. Watson died on December 20, 1948, at 346 Dick Avenue, Hamilton, Ohio. He had never been active in class affairs so we have no details of his passing.

Sharp-eyed Jerry Coldwell was the first of several to discover that misspelling of my name in the April issue and oddly enough a mistake in the March notes was in the write-up of Jerry's promotion. In the seventh line of that paragraph, "diverted" should have read "directed." "Just to think that for 35 years I have been spelling your name incorrectly! Being a very trusting sort of a person, I believe everything I see in print, hence, the *Anzel* must be correct. Had expected to see you this week end in Boston but there was some mix-up in regard to my seats so I didn't make it."

After completing 30 years of service with E. I. duPont de Nemours and Company, Inc., Ken King plans to retire on June 30. Ken was at Amour Institute of Technology for two years before joining our Class. After graduation in 1915, he was in charge of the laboratory of the Marathon Paper Mills Company from February, 1916, to April, 1917, when he enlisted in the United States Army. He was discharged from the Army as a first lieutenant in February, 1919, and joined the duPont Company's technical laboratory in April, 1919. He served as a demonstrator and salesman in the Chicago dyestuffs sales office and was later appointed assistant manager. He became manager of the Fine Chemicals division on December 1, 1933. He married Edith Dean Apted of Grand Rapids, Mich., on March 19, 1932, in Chicago, Ill. They reside at 812 Blackshire Road, Wilmington, Del. Enviously, we all wish Ken good luck and a comfortable, easy and enjoyable time upon his retirement.

In the December, 1948, issue of *Plastics*, a fine-looking picture of Ben Neal carries this write-up: "James B. Neal, president of Norton Laboratories, Inc., came to Lockport, N.Y., in 1916 as a graduate in Chemical Engineering of . . . Technology, to have technical charge of the company's production of metallic magnesium in the First World War. After ten years of research and development work in a wide variety of products, the company in 1926 engaged in the molding of plastics. This has continued until the present time, making Norton Laboratories one of the very earliest concerns in the molding business." Nice going, Ben!

From Gainesville, Fla., in February, Jim Tobey wrote the following note: "We have been in sunny, hot Florida for two weeks and plan to stay longer. But it's too crowded." Ah, me. These classmates who spend their winters in the sunny South!

Because of the difficulties of securing complete registration, the following is a partial list only of 1915 men attending the famous Mid-Century Convocation: Henry L. Marion, George W. Simons, Jr., Allen Abrams, Herbert W. Anderson, Abraham Hamburg, Gabe Hilton, H. E. Morse, H. L. Leeb, Ralph E. Curtis, Philip L. Alger, Douglas B. Baker, O. Ricker Freeman, Archibald Morrison, L. F. Silversmith, E. L. Sullivan, Carl W. Wood.

At the January 21 meeting of the Hudson-Mohawk New York section of the American Association of Textile Chemists and Colorists, Alton A. Cook, Chief Chemist for the Arkansas Company of Newark, N.J., gave a paper, "The Function of a Laboratory in the Evaluation of Textile Finishes."

San Willis's widow, Anne, writes about her family and her marriage to a 1916 man. Congratulations to them both. "Peggy has added another 'Sanford Lawton' to the family in the form of my sixth grandson, named for his grandfather who did not live to see him. Incidentally, Peggy has been ill most of the time since little Sandy's birth, so I have stayed on in Marshfield to help her. Now her husband has been transferred to Baltimore and we are trying to sell this big old place. If the following bit of family news is of interest to you or any of the readers of The Review, I am only happy to tell you that I remarried a short time ago — you guessed it — another M.I.T. man! Just couldn't live without one! In all seriousness, Azel, Marshall S. Wellington'16, and I plan to make our home in West Haven, Conn., very soon. We were both alone, if you discount various children and grandchildren, and we believe we will be very happy together, in West Haven, where Marshall is located as sanitary engineer for the city of New Haven. I shall hope to meet you and Fran again one of these days — you may find yourselves in Connecticut and, if so, there will always be a welcome at 72 Halcault Street."

After this fine letter from Parry Keller, 105 Fir Hill, Akron, Ohio, it was a pleasure to see him here at the Convocation and enjoy his always delightful company: "Many moons have come and gone since you and Frances honored us Akron classmates with that delightful visit last summer. It was, indeed, a real pleasure to arrange a party for you. You are doing your usual and consistent good job with the class notes in The Review. Did you know that The Review is generally rated very highly and is objectively considered a top-flight magazine in its class in this region? I wish that I could help you more often with contributions for the '15 notes, but there seems to be either a dearth of news or very little which would be interesting enough to print. A lack of imagination and alertness may be my trouble in this respect. I will admit also to some laziness when it comes to writing letters. My son, Parry, Jr., is now a full-time instructor at the Case Institute of Technology in Cleveland. Also, he hopes to be awarded a master's degree in June. He comes home to Akron for week ends. Observing certain activities of his, I am beginning to suspect that I am not the principal attraction for him here. I was sorry that he was away last summer when you and Frances came and that he could not meet you both."

To do good and distribute, forget not — the Alumni Fund. — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

It was surely great to see so many of you at the Convocation. By all records available there were 36 representatives of 1916, which is about the largest of such gatherings outside of a reunion. It's too bad we couldn't *all* get together at one time, though an attempt in that direction was made. President Bill Farthing and your Secretary organized a 1916 breakfast at the Tennis and Racquet Club on Saturday morning, April 2, and attempted to contact all those who had shown indication of attending the Convocation. We admit we missed a great many of you, and our apologies are extended to each and every one of you who failed to receive notice of such a get-together. No slight of a single individual was intentional, and we pray to be forgiven. However, 21 of us did meet (Bill Farthing was held up by business at the last minute and could not make it, sad to relate) and we had a very enjoyable time. While most of the time was spent talking and enjoying ourselves, we did accomplish a bit of business in the form of appointing a committee to pursue the matter of a future class gift to the Institute. Those who will delve into this matter are Steve Brophy, the chairman, Bob Wilson, Art Caldwell, Walt Binger, Barney Gordon, and Joe Barker. We hope you will give these gentlemen every support you can in their effort to arrive at what is really an important decision. They will appreciate any suggestions from any class member.

In addition to those named above, the following 1916 men are recorded as having attended the Convocation at some time or other during its three days: Dick Berger, Steve Berke, Clint Carpenter, Sandy Claussen, Paul Duff, Herb Ellis, Ralph Fletcher, Jack Freeman, Dutch Gaus, Jeff Gfroerer, Percy Gooding, Hal Gray, Saul Hoffman, Chuck Loomis, Tom McSweeney, Bob Miller, Joe Minevitch, Shatswell Ober, Izzy Richmond, Eric Schabacker, Harry Smith, Hy Ullian, and Steve Whitney. We might put in a request here that the 90 per cent of you fellows who never send in news for this column might break the silence and let us hear from you. The list above signifies you're a pretty active group to come from Cleveland, Chicago, and other points south and west, so send the details.

Some letters *have* arrived in the last month, however, and we are glad to continue our reports on the activities of those of 1916 who do make themselves heard.

A long and highly interesting letter from Joey Connolly just missed the last column so we insert it herewith pronto. He is busy "trying to keep Chicago's people healthful." His Chicago health department is currently working to carry out the recommendations of a survey made in the area by the United States Public Health Service. From the looks of things, success is being achieved, for Joey relates that his department has achieved the lowest general death rate in the city's history, along with the lowest maternal mortality rate and second lowest infant mortality rate. He continues: "My youngsters are growing up rapidly. Ruth, my eldest, is a junior at Carleton College. Joel, Jr., is soon to finish high school. He is quite a sailorman and last summer he crewed on a boat in the Edgartown Regatta. As for myself, I go in for bowling most of the year and am still quite intimately connected with social service work. We go to Brewster, Mass., every summer, and while there we go to Boston. It is always a satisfaction to look across the Charles basin to admire the Institute buildings and to reflect on the fine work being done for the future, as well as the present, within them."

George Crowell, now in the general building contracting business in Brockton, Mass., originally began his post-M.I.T. career with 11 other '16 men in the drafting rooms of Westinghouse, Church and Kerr of New York. That lasted only until 1919, when the "construction game" took him to Brockton. He has also done some appraisal work on tax appeal cases and fire adjustment losses, and is first vice-president of the Peoples' Savings Bank. He married Martha Uehlein of Washington, N.J., in 1919, and has three sons and a granddaughter. He states the interesting fact that Mrs. Leghorn, the class's hostess at its 30th reunion, was a member of the same Wheaton College class as Mrs. Crowell.

Doug Robertson, after having basked a long while in the Florida sun, brings us up to date. In 1941, he left Mount Hope Finishing Company, where he had been for 16 years, and moved to Taunton with his own business, the Mt. Hope Machinery Company. He makes cloth, paper and film labor-saving production auxiliaries and has been blessed with a successful growth of his business. He writes further: "Three years ago I lost my wife. I have since married Bettina Brabrook of Taunton. My son is a freshman at the Institute. I am still flying. Last summer, I received my water-plane license. This was the first winter I didn't go skiing. Maybe I will get up my courage next year."

Meade Bolton crashed through with another letter; second in less than three months! If only we got more like that. He sent along a fascinating newspaper from the Canal Zone. You read one side of it and it is English, but turn it upside down and over and the same front page greets you, but in Spanish. We got a headache trying to figure it out, but it was fun. Meade, incidentally, has had a hand in the design of a series of postage stamps celebrating the centennial of the Gold Rush and the resulting stream of prospectors across the Isthmus. The paper he sent contained an interesting descriptive article and photographs of them. Meade is retired from active service effective April 30, but is not sure where he will go next. He speaks of being in the Boston area in a few months, and we shall all be most happy to see him.

Drummey-Duffill, Inc., a firm of architects and engineers in Boston, has put out a highly interesting booklet listing by name and photograph a series of buildings and other structures in which it has had a hand. It is evidence of 30 years of hard work, says one of the partners in said Corporation; Bill Drummey by name. Bill states he and his co-worker, Hugh Duffill '20, find themselves very busy, but that "this night-shift and all-day-Saturday press makes you realize you are no longer even close to a boy. In the matter of age; why, I am officially an old man. My remaining son — I lost two — made me a grandfather last January. When I become really aged, I am going to take up golf. I look forward to seeing you all in 1951. I do not know if I will play baseball, but I hope to get some exercise in my arms — or one arm anyway — with some congenial souls." Bill spent 18 months in Asia as a major of engineers, a "retread," as he terms it. How about some more company literature like the above-mentioned? If you can't find time to write you can at least drop one of those propaganda sheets in the mail.

Leonard Best writes that he and his wife planned to leave in April for a long trip to the Coast by car. Maybe some of you will meet up with him on his long jaunt. He says he is still primarily interested in selling pencils but continues active in matters of education. He was recently re-elected president of the Union County School Board Association, chairman of the New Jersey Educational Planning Commission, and vice-president of the Summit Board of Education. His daughter, Joan, is a freshman at La Salle Junior College; son Richard, a junior in high school; and youngest daughter, Beverly, in the 4th grade, plays the piano and Leonard thinks she may go places. He concludes by saying that his golf game is terrible.

Fred Childs, located at East Corinth, Vt., indicates he would be glad to hear from any of his old friends. He writes: "My present work is in the office of Bowen-Hunter Bobbin Company, Inc., whose Card Room Bobbins are recognized as 'Tops' by every cotton mill superintendent or purchasing agent in the country. I divide my time between purchasing, machine design, cost accounting and numerous other chores, not forgetting incentive bonus system for the employees. My family consists of three: wife, daughter and myself. My daughter graduates this June from the local high school. Life in the small village of East Corinth (the most frequently pictured model village in the United States) has been very busy and interesting; hence my spare time has been taken up with a great many community jobs such as Red Cross, church, lodge, moderator at town meetings, and coaching local athletic teams."

From mid-ocean, aboard the S.S. *Uruguay*, dated March 24, comes a letter from Frank Holmes. Our letter to him reached him the afternoon he was leaving for a cruise to Rio de Janeiro and Buenos Aires. The trip, he says, has been grand. He adds that his technical studies did not land him in a professional business, but he has followed his father in a business career, being treasurer of Samuel Holmes, Inc., poultry dealers in Faneuil Hall Market, Boston. In 1930 he married Mildred Anderson, and their greatest hobby is cruising to points of interest all over the world.

In addition to seeing Joe Minevitch at the Convocation, we also were favored with a letter from him. He states that for over 30 years he has continuously practiced the profession of chemical engineering in a true sense, and not without a marked degree of success. Most of the time he has been with the E. B. Badger and Sons Company of Boston. He has designed and constructed many chemical plants throughout the country. His daughter was graduated from M.I.T. in Course IV in 1942, served during the war in the WAVES, and is now married and practicing architecture.

When we write for news, don't put the request aside with the idea of sitting down two or three days later and preparing a carefully studied documentation of events filling five or six pages. True, we would like to have some long letters, but it is always helpful to get a few paragraphs dashed off longhand on the back of our letter of request, such as we recently got from Cy Guething who writes from Birmingham, Mich., as follows: "A preponderant regret is that we had but the one offspring — Ted'41. It appears that they now have a psychoanalytical system at the Institute, for they advised him he would only be good as a manufacturers agent. So, while he was in the service, I established a machine tool agency for us. Within two years of his return he took over. He permits me three months a year off at full pay — have never questioned this. I learned sufficient arithmetic (Ed: called Calculus) at the Institute to realize that we should have had four sons." For those whose simple arithmetic has bogged down through disuse over the years, we are glad to explain that this would give Cy twelve months' vacation per year. What would you do, Cy, if $N_s = 5$, where N_s is the number of sons?

Clint Carpenter, in addition to being at the Convocation breakfast, sent a long and interesting note, darkened, however, with the news of the passing of Chester F. Lewis, in Richmond, Va., on March 17. Your Secretary has conveyed to Chet's wife and son the deep sympathy of the Class. — Clint is now engaged in the construction field. Formerly, his work was almost entirely bridge construction and marine structures but now has expanded into the industrial field, having recently completed a 22,000,000 gallon sewage treatment plant in Norfolk. His daughter, Sylvia, graduated at Finch College, New York, last June and has been studying music since. Son Jerry is at Woodberry Forest School and after one more year expects to enter M.I.T. to study Naval Architecture.

Notes from Here and There Department: Alex Klemin, of Greenwich, Conn., has now retired from teaching at New York University and is devoting his time

exclusively to writing and editing. He is helicopter editor of *Aero Digest* and editor of *International Handbook of Aeronautical Engineering*. – Bob Wilson has written a very thought-provoking article for the January 31 issue of *Chemical and Engineering News* of the American Chemical Society. It deals with traits of a research director, various philosophies of handling research projects, and functions of all units from the top down with a view to better organization and returns from investment of time, money, and people. – Steve Brophy has been elected chairman of the board of directors of Kenyon and Eckhardt, Inc. He was elected president of the agency in 1937. – Charlie Paugh was for many years chief engineer with companies in Detroit, Mich., and Fulton, N.Y. Since 1943, he has been with U.S. Industrial Chemicals, Inc., in Baltimore as utilities engineer. One of his recent projects was a two-million-dollar addition to a high-pressure steam plant. In 1945 he was awarded grade of Fellow in American Society of Mechanical Engineers. – Jap Carr writes from Palm Beach (Florida, of course) that he is getting a good rest from business and a good deal of tennis and other usual beach activities, or perhaps "inactivities" as he states it. – Vert Young was in Boston this winter on business and sent his regrets at being unable to make the trip again for the Convocation. – Francis Stern and his wife spent the winter in California, returning to their home in Hartford, Conn., in April. – Earl Mellen has been laid up a good part of the past spring due to an operation. We learn that his progress since has been excellent but he may be faced with another before he is finished. We hope this finds you well on the road back, Earl, and our best wishes to you.

If you are traveling to Cape Cod this summer, don't forget that Emory Kemp has a guest house, the Homestead, in Wellfleet, on Cape Cod. His invitation to make this a stopover place appeared in these notes last winter, and it is repeated here. For all indications of Emory's description and the photograph sent along, the Homestead will be well worth your efforts to reach it in your travels, for it is a most attractive spot.

One final note. Don't forget the 1916 monthly luncheons at Thompson's Spa, 239 Washington Street, Boston, the second Tuesday of each month, anytime between 12:00 noon and 2:00 P.M. See you there. – RALPH A. FLETCHER, *Secretary*, Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

• 1917 •

I, Sherry O'Brien, will find it much simpler to compose these June notes if I can come out in the open, as compared to the effort involved last year in doing a ghost-writing job and making them appear to be the work of our regular Secretary only to have him expose my hand in the end. So bear with me – or quit reading.

Words fail me and space does not suffice properly to describe the glories of the Convocation and sing the paeans of congratulations to those responsible. No doubt that will be accomplished elsewhere; but the writer attended and, with an eye to these notes, endeavored to compile a list of the classmates in attendance. While the list is not guaranteed as complete, no less than 50 upheld the honor of the Class and thoroughly enjoyed the proceedings: Chet Ames, Stan Barrows, Justin Basch, Rudy Beaver, Walt Beadle, Ken Bell, Ray Blanchard, Ted Bernard, Ray Brooks, Penn Brooks, Ken Childs, Kid Cochrane, Phil Cristal, Art Dickson, Barney Dodge, Vic Dolmage, Stan Dunning, Dutch DuPont, Bill Eddy, Fred Foss, Heine Gartner, Art Gilmore, Henry Goldmith, Johnnie Holton, Ham Wood, Bill Hunter, Stan Hyde, Harold Knapp, Arthur Knight, Howard Littlefield, H. E. Lobdell, Dick Loengard, Dick Logan, Bob Marlow, Leon McGrady, Joe McManus, Win McNeil, Jack Wood, John Parsons, Dix Proctor, Tom Ryan, Harry Sandell, Ed Sawyer, Rad Stevens, Ray Stevens, Tubby Strout, Win Swain, Don Tarpley, Dad Wenzel, and Walt Whitman.

A goodly number of these classmates were accompanied by their wives and children. I trust, however, that if any of the distaff members read these notes they will forgive me for not listing them, as I do not wish to add a serious sin of omission to my many of commission, inasmuch as I do not have a complete list. Due, no doubt, to the full schedule of events, there was no organized meeting of 1917 men, but quite a few of the boys and some of the wives and children congregated in McGrady's room at the Statler after the evening sessions of the Convocation were over. A good time was had by all and the ever present picture-taking activity of McGrady duly performed to record the festivities. These notes are being indited on April 12 and last evening Mr. and Mrs. O'Brien entertained Leon L. McGrady at dinner here in Chicago and, following the above pattern, adjourned to his hotel room where the pictures above mentioned were viewed through the new Eastman Kodaslide Table Viewer. (What a name! You don't view a table – you see pictures!) Incidentally, Mac stayed over for the annual M.I.T. Banquet on April 14, at which we had as guest speakers Dr. Compton and President Killian. Rad Stevens and Penn Brooks were also present.

A letter from Lin Noyes in Florida informs us of a few weeks' sojourn in Jamaica, British West Indies, returning to Florida on March 1. At that time Phil Hulburd, his wife and daughter, spent two weeks with him and Mrs. Noyes. The Hulburd family then trekked westward to visit California and other spots. They intended to visit I. B. McDaniel, Captain, U.S.N., Retired, in Azusa, Calif. Lin states that Mac is now dean of the school of architecture at the college there; however in checking a list of United States Colleges and Universities, I fail to find one with Azusa as its location. Lin expected to head for Boston about April 8 so, no doubt, he visited with some of the Boston classmates and, if so, they may have located Mac's missing college.

A request to Dick Whitney for information concerning his activities since he left the publishing business for the United States Navy brought a letter from tidewater Virginia, with very little specific information. However, Dick states that the May issue of the *Red Book* will carry a story on "The Whitneys of Virginia" and that all the facts are contained therein. I daresay he hopes we will all get curious and help out the newsstand sales of his old love – the *Red Book*. His letterhead carries the title "Chimney Corner Inc.," Hudgins, Va. It also bears the Pontiac automobile trademark, so I deduce that is one of his activities. A Chimney Corner is some hangout for the old sea dog and yachtsman that we all knew him to be.

Well, well, the big swine and rose fancier of the great Northwest is the recipient of a new honor that he prizes most highly. It seems Neal Tourtellotte attended a convocation of his own and there it happened! "The Washington State Association of the Future Farmers of America bestows on you its highest honor – The Honorary Degree of State Farmer in recognition of the many things you have done on behalf of agriculture and the Future Farmers of America." The award was accompanied with a gold charm. The Future Farmers of America are vocational agriculture students in high schools over the country and exceed the 4-H Clubbers in members. Let Neal puff up with elation (if he puffs much more it will be fatal) but it seems to me Mrs. Tourtellotte has "gone" him one better. She is now Republican National Committeewoman for the State of Washington and that does not take any explaining as per the State Farmer deal. We are happy to state that after a recent stay at the Mayo Clinic, Mrs. Tourtellotte is back home in better health.

It is a pleasure to report to the class members worried at the 30th reunion about Dutch DuPont, because of his critical illness, that he showed up hale and hearty at the Convocation in jovial spirits and with good reason. Dutch, for many years as member and then chairman of the Delaware State Highway Department, has been working to put over a project that others have attempted over the last 25 years and failed. That is the building of a $40,000,000 bridge over the Delaware River, south of Wilmington, to just south of the Salem canal on the New Jersey side. Dutch finally succeeded in completing the deal, getting the job financed and the work started. Ninety per cent of the work is today under contract but now the irony of it all. Due to the election of a Democratic governor last fall, Dutch is momentarily expecting the old political heave-ho into the ranks of the unemployed; however, he is taking it with a smile, and what else can one expect from one who walked in the valley of the shadow and came out smiling!

The years are making Dud Bell philanthropic and benevolent. Despite rent control, and so forth, he has become the proud possessor of a Bristol apartment house in which the apartments are designed for small pocketbooks; a dwelling place unequalled between Philadelphia and New York, according to Dud. The benevolence comes in due to the fact that Sears Roebuck is building a new plant at Bristol, and if Penn Brooks will pass the word on to his young executives where they can find a nice spot in which to live, Dud of-

fers a decent drink as a commission instead of the regular stuff he keeps on hand for "Seventeeners." On rereading this paragraph, something doesn't quite jibe. Small pocketbooks – and commissions . . . there's a catch somewhere. Penn will report it in due time; but meanwhile we can all congratulate Dud on passing his physical for insurance for the class gift.

In conclusion, let me state for the benefit of any and all that if at some future reunion, the Class Secretary (in an offhand nonchalant manner), asks one to pinch-hit and write the class notes for any particular month, and if said Secretary assures one he will forward all the matter and data necessary and that it will be a few moments work of editing – let me herein state and depose – that I received as "said subject matter" . . . wrong information on the deadline, a copy of the notes written for the May issue, and the information that Walter Beadle in addition to his title of vice-president (DuPont) now has the title of advisor. And if Ray Stevens censors this last paragraph, he can find a new writer of notes for June, 1950. – SHERRY O'BRIEN, *Class Secretary for June*, 1200 Lake Shore Drive, Chicago 10, Ill.

• 1918 •

I had long anticipated getting away to attend the Convocation in Cambridge, March 31 to April 2, but owing to the malignant conspiracy of perverse circumstances, I was not able to do so. However, I am reliably informed that at least the following of the brethren were there. This list is probably not complete but the editor of The Review assures me it constitutes a true copy of the list of names which appeared on the sheet voluntarily signed by those who wished to record their presence in the rotunda of Building 7 where registration took place.

Alphabetically arranged, the record reads as follows: Harold V. Atwell who once did a thesis in electrochemistry with Clarence Fuller and Julie Avery. My pitcher comes up from dipping into the well of his current news with no more than a drop of information: His address is 69 North Elm Street, Beacon, N.Y. Saxton W. Fletcher, formerly of *Technique*, *The Tech*, and the Finance Committee all of which prepared him for the presidency of the J. O. Ross Engineering Corporation, 350 Madison Avenue, New York City, and the ownership of a farm in the lovely and admirable locality of southern New Hampshire. James A. Flint, erstwhile bright boy of Course II; a lieutenant in the Navy during World War I and a four striper this last time; now in charge of research and development for the Jeffery Manufacturing Company of Columbus, Ohio. Stanley H. Franklin, chemical engineer from Providence, who still stays in the home town but is now director of the production-quality division of the Fram Corporation. Craig P. Hazelet, once a special student from Cordova, Alaska (sounds as though it should be Spain but it isn't); now you guess what with Hazelet and Erdal, construction engineers, Heyburn Building, Louisville, Ky. Herbert B. Larner who chased microbes through milk in the Biology and Public Health Course to land, not at all breathless with the Glyceride Processes division of the M. W. Kellogg Company, 225 Broadway, New York. Alan B. Sanger, who dug himself out of Mining and Metallurgy to search for sorbite and overhead stopping in the advertising business: Sanger Funnell Inc., 60 East 42d Street, N.Y. Harold V. Sturtevant who uses his mechanical training as plant engineer of Ortho Pharmaceutical Corporation, Raritan, N.J. Remember, he was vice-president of the Class, sophomore year. Albert C. Walker, another chemical engineer but one who came to us from the University of Colorado, now contributing his brilliance to the technical staff of the Bell Telephone Laboratories, Murray Hill, N.J. H. Loring Wirt, anchor man on our winning tug-of-war team and with a list of extracurricular activities as long as your forearm, who has used what he learned in Naval Architecture and Marine Engineering to work with the turbine sales end of the General Electric Company, Schenectady, N.Y. Theodore P. Wright, Vice-president for research at Cornell University. – GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

• 1919 •

The class response to our 30-year reunion attendance at Norwich Inn, Norwich, Conn., June 24, 25 and 26, was, at the time of this writing, about 55 signifying that they would attend and about 95 who regretted that they could not make it. We are all looking forward to a real week end of relaxation and renewal of our contacts with former classmates.

Dean K. Webster, Jr., wrote to me stating that he would try to attend our 30-year reunion but that he was going to be busy with a few things such as his fraternity reunion, Rotary International and a feed convention. He writes: "You asked for news items and, accordingly, thought I would mention that Howland Sherman and I, and our wives, recently took a 12-day cruise on the Grace Line to South America and visited our contemporary fellow member of Phi Beta Epsilon, Alfredo de Zubiria Stevenson, at Cartagena, Colombia. We really had a perfectly grand time and can highly recommend this kind of cruise to classmates and friends. Zubie was well known to many members of the 1919 Class and these friends will be interested to know that he is still spare in figure and carries a very thick head of black hair. This is considerably more than we can report for most of the rest of us in 1919."

The following 1919 men are known to have attended the Convocation exercises at the Institute this spring: Louis Grayson, Washington, D.C.; William H. Vogt, Jr., 357 Bonnie Brae Avenue, Rochester, N.Y.; Karl F. Rodgers, Bell Telephone Laboratories; Frederick J. Given, 327 Vose Avenue, South Orange, N.J.; Arthur C. Kenison, M. G. Summers Agency, 60 Federal Street, Boston; Harry H. Mardoian, State Highway Department, State Office Building, Hartford, Conn.; Wilfred O. Langille, Diehl Manufacturing Company, Finderme, Somerville, N.J.; Donald D. Way, 226 Wychwood Road, Westfield, N.J.; Milton A. Loucks, Curtin-Hebert Company, Inc., 7–13 Forest Street, Gloversville, N.Y.; Kenneth S. Davidson, 1201 Park Avenue, New York; Thomas H. Bott, Jr., Beverly Savings Company, 175 Cabot Street, Beverly, Mass.; Harold F. Marshall, Warren Webster and Company, Camden, N.J.; Jacob Lichter, Southern Fireproofing, Federal Bank Building, Cincinnati, Ohio.

Ray Bartlett writes that he will definitely be at the reunion and that Boston has been his headquarters for the last two years. His son is now married and his daughter is away on rehabilitation work with the veterans. – Karl Rodgers, since February, 1949, has been at Murray Hill, N.J., the new location of the Bell Laboratories. He bought a house at 31 Dunham Avenue, Cranford, N.J., which is now his new address. – Jim Strobridge has recently been made a director of the Lithographic Technical Foundation which is the research organization of the lithographic industry. Jim has been asking for the correct address and telephone number of Bill Pinkney. If anyone knows, kindly inform Jim.

Stan Weymouth is still with the Maine State Highway Commission and sends his best regards to all classmates. – Tom Derr's elder son, Tom, Jr., is planning on Harvard in September. His elder daughter will be ready for college the following year. – EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

• 1920 •

There were just about 20 members of the Class at the magnificent Mid-Century Convocation. In comparison with other classes, this wasn't a bad showing. If you weren't there, just ask any of them about it and they will confirm the fact that you missed by all odds the most inspiring event that old M.I.T. ever put on. It certainly made all of us proud to have been associated with the Institute. Here is the list of those who inscribed their names on the 1920 roster at the registration room: Frederick W. Boley, Air Reduction Sales Company, 2010 Clark Building, Pittsburgh 22, Pa.; Flossie Fogler Buckland, Schenectady, N.Y.; Harold Bugbee, Walter B. Snow and Staff, Inc., 1401 Statler Building, Boston; Percy Bugbee, National Fire Protection Association, 60 Batterymarch Street, Boston; Malcolm S. Burroughs, Dexter Folder Company, 330 West 42d Street, New York 18, N.Y.; Philip J. Byrne, Jr., Standard Oil Development Company, Elizabeth, N.J.; Henry R. Couch, Eastman Kodak Company, Rochester, N.Y.; Norman P. Dana, 295 Madison Avenue, New York, N.Y.; George F. DesMarais, 233 Broadway, New York, N.Y.; Donald L. Dowling, Roots-Connersville Blower Corporation, 122 East 42d Street, New York, N.Y.; Erwin Harsch, Morton C. Tuttle Company, Park Square Building, Boston; Harold F. Hedberg, Albany Felt Company, 1393 Broadway, Albany 1, N.Y.; Daniel J. Hennessy, 66 Risley Road, Brookline; Lauren B. Hitchcock, Quaker

Oats Company, 1900 Board of Trade Building, Chicago 4, Ill.; Harry J. Kahn, Stewart Clay Company, 133 Mulberry Street, New York, N.Y.; James W. McDonald, Jr., N. A. Lougee and Company, 120 Broadway, New York, N.Y.; Samuel Schenberg, Lafayette High School, Brooklyn, N.Y.; L. G. Lee Thomas, Hamilton-Thomas Corporation, 1000 Weller Avenue, Hamilton, Ohio; Robert P. Warriner, William Carter Company, 33 Morris Street, Springfield 5, Mass.; Ernest P. Whitehead, E. Whitehead, Inc., 97 Webster Street, Worcester 3, Mass.; Oscar P. Young, Lehigh Valley Transit Company, Allentown, Pa.

In addition to these there must have been a number of others because your Secretary saw and conversed with Ed Farrow, Frank Bradley, Bob Patterson, Jim Gibson, Al Glassett and Tony Anable. I also got a glimpse of Larry Davis. I would have liked to have seen more or all of these classmates and to have seen some that I didn't catch up with at all, but with up to 15,000 in attendance, you can imagine that it was not a simple matter to make contacts. The many I did see all did credit to the Class, looked younger than their years and expressed interest in our forthcoming 30th reunion.

Plans for the big 30th are progressing rapidly and favorably. Al Glassett has been appointed chairman and is forming an excellent reunion committee. The Sheldon House has been approached and has indicated that a good warm welcome awaits us there. The exact date awaits plans for Alumni Day a year from next June and you will be advised of all details plenty far in advance so you will have no excuse whatsoever for not being there. We anticipate that it is going to be even bigger and even more enjoyable than the 25th and that is saying a great deal.

Talking with Al Burke, the hard-working and conscientious Class Agent on the Alumni Fund, he mentioned the extraordinary importance of the Fund this year in connection with and in addition to the great financing development program. He said, and I heartily agree, that it would be a wonderful thing if the Class made a much better showing on the Alumni Fund than we have up to now, both in number of contributors and the amount. M.I.T. needs and deserves our complete loyalty and support during this critical period.

A welcome note from Buzz Burroughs enclosed an interesting clipping from the New York *Herald-Tribune* with a picture of Roger McNear and announcement of his appointment as assistant to the President of United States Rubber Company. Roger was formerly manager of special brands for the company's tire division. Even in a newspaper picture he looks very handsome and distinguished. Other current evidences of the quality of our Class may be found in the recent announcement that Homer Howes has been elected president of the Textile Bag Manufacturers Association. Homer, as you probably know, is vice-president of Bemis Brothers Bag Company, St. Louis. Tony Anable has been made director of personnel and public relations of the Dorr Company, New York. Flossie Fogler Buckland has been appointed research secretary of the heat transfer division of the American Society of Mechanical Engineers. She recently presented a paper at the convention of the American Institute of Electrical Engineers. Her son is a freshman at M.I.T. this year. Flossie's address is 1711 Randolph Road, Schenectady. — Franklin Badger has returned from several months in Hollywood, Fla., and is back at 1368 Commonwealth Avenue, Allston.

Your Secretary regrets to report the decease of Robert W. Mitchell on March 29. His address was 171 Hancock Street, Cambridge. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

You have a date at 5 P.M. at the Hotel Statler on Alumni Day, Saturday, June 11, for our annual class meeting in Boston. Look for the room number on the Statler bulletin board. Bob Miller has revised the class movies for the occasion and there will be the usual opportunity for good fellowship and a respite from the day's activities, which have made these informal gatherings so popular in the past.

The 57 members of the Class who attended the Convocation and Inauguration ceremonies will agree that the three days were filled with an outstanding series of events that will be long remembered. The committee in charge, of which Jack Rule was a member, is to be congratulated on the careful planning of the multitude of details and the entire staff of the Institute deserves highest praise for the flawless operation of the rather involved program. Among those present were: Elly Adams, Tony Anable'20, Red Bachmann, Ollie Bardes, Jack Barriger, Mich Bawden, Fred Binns, George Chutter, Cac Clarke, Bill Clements, Hill Cook, Chick Dube, Glenn Fargo, Ed Farrand, Si Freese, Al Garrigus, Harold Griswold, Dan Harvey, Bob Haskel, Sumner Hayward, Charlie Herty, San Hill, Vic Homerberg, Irv Jakobson, Murray Jones, Amby Kerrigan, Frank Kittredge, Chick Kurth, Ivan Lawrence, Don McGuire, Charlie MacKinnon, Howard MacMillin, Sandy McMorran, Dan MacNeil, Warrie Norton, Jim Parsons, Ed Praetz, Lark Randall, Don Randolph, Herb Reinhard, Fred Rowell, Jack Rule, Ray St. Laurent, Jack Sherman, Bill Sherry, Saul Silverstein, Art Skilling, Eric Smith, Whit Spaulding, George Thomson, Manuel Vallarta, Joe Wenick, Charlie Williams, Ev Wilson, Dick Windisch, Albie Wood, Dave Woodbury.

Manuel Vallarta of Mexico City, who came the greatest distance, has been cited in the introduction to Professor Norbert Wiener's new book on *Cybernetics* as one of the participants in the original discussion group which conceived the basic ideas of the control and communication theory which the volume covers. Glenn and Mrs. Fargo were welcome neighbors at the Boston Garden sessions. Glenn told us he had recently lunched with Dan MacNeil, who is with the Wheeling Steel Company in Boston. Bill Sherry, of Tulsa, made the interesting observation that his family of eight ranged in age, during March only, from nineteen to nineteen — months to years, that is! We are glad to be able to report that little Billy Sherry, star guest of our 25th reunion, has fully recovered from his baseball injury and is back at school. Irv Jakobson was seen at the sumptuous party given by Alumni President George Dandrow'22, and Jake, Ray St. Laurent, Dave Woodbury and your Secretary attended the breakfast meeting of the M.I.T. Financing Development Committee. Ed Praetz was pictured in the Boston papers as an early registrant for the Convocation events. Sparked by John and Mrs. Barriger, John IV, a senior at the Institute, and his pals, the 1921 luncheon table at the Cambridge armory grew and grew and grew. San Hill, Ivan Lawrence, Art Skilling and Joe Wenick were good enough to advise in advance of their plans for attending the mid-century celebration and we saw Doane Greene in the subway at the start of the trek north. Returning, we had the pleasure of a stay with the perfect hosts, Ray and Helen St. Laurent, at their lovely home in Manchester, Conn.

The first secretarial committee letter of the month came from Harry Field of Honolulu, who says: "Harold H. Cake, accompanied by his wife, Edna, and his five-year-old daughter, Suzan, came to Honolulu on the Matson liner *Lurline* to get away from the rigorous winter in Portland, Ore. It was fun seeing Cookie, who is associated with the Haseltine Company in Portland, a mill supply house. Suzan not only started hula lessons, but taught the teacher a couple of Portland variations. Harold arrived just in time to witness the closing down of a number of air bases which we worked so feverishly to build and rebuild after December 7, 1941. There is hardly a corporal's guard left. I saw Fred Kingman while listening to some of the debate at our Territorial Legislature. He is busy in many activities here. K. C. Mui left Honolulu and, according to my last information, went to Cuba as consul general representing the Central Government in China."

San Hill sent a clipping from the March issue of *Drug and Cosmetic Industry* magazine, announcing that Harold Stose has joined the New York consulting engineering firm of Sam Tour and Company, Inc., as head of the chemical engineering department. Harold later confirmed that his new headquarters are at 44 Trinity Place, New York City. Present at the March meeting of the M.I.T. Club of Northern New Jersey were Asher Cohen, Sumner Hayward, Fred Kowarsky, Ed Lockwood, Harold Stose, Joe Wenick and your Secretary. Joe has become an avid stamp collector and is an officer of the active club in Montclair. We owe him thanks for a welcome contribution to our son's collection.

Joseph W. Fowler, formerly a rear admiral, has returned to civilian status and is a partner in the firm of Christy and Fowler, San Francisco. Albert L. Edson has also joined the ex-brass contingent. A former colonel in the Air Forces, he is now the manager of Boston Airport. James L. King has been promoted from commander to captain, United States Navy. New addresses have been received for Howard L. Face, P. Exton Guckes, Alexander J. LaPointe, Albert H. Ranen, John R. Gallimore, N. Walter Oakes and Howard L. Ross.

Publicity continues to pour in as Dave Woodbury tours the country giving his current lecture, "Atomic Energy for Peace," which is approved and supported by the Atomic Energy Commission. Dave carries on many activities and his detailed record of accomplishment requires almost a full newspaper column. Armed with arts, engineering and journalism degrees from four schools and the experience of five industrial, research and editorial assignments, he has long been a free-lance writer, lecturer and producer. He has authored at least nine well-known nonfiction books, contributed to the Encyclopedia Britannica and some 10 leading magazines, produced several radio network sketches, written and produced half a dozen stage plays and lectured on scientific subjects. He is professor of nonfiction at the annual summer conference for writers at the University of New Hampshire and has been civilian consultant to the Surgeon General, United States Army, in visual aid work.

The Winchester, Mass., *Star* carried a lengthy story on a native son, Alfred H. Fletcher, Director of the Bureau of Sanitary Engineering of the New York City Health Department. After graduation, Al was successively sanitary engineer for the health departments of New Hampshire and Louisiana and the city of Memphis. He was on the faculty of the school of hygiene and public health of Johns Hopkins University before assuming his present post. He is the author of a number of publications in his field and a fellow of the American Public Health Association in addition to his activities in the Conference of Municipal Public Health Officers, the American Water Works Association and the Smoke Prevention Association of America. Al was married in 1923 to the former Elizabeth Koonce of Memphis. He and Mrs. Fletcher have two sons and make their home in Malba, N.Y.

The New Haven *Register* tells of the appointment of Charles A. Williams to the City Plan Commission for a four-year term. Charlie is vice-president of the United Illuminating Company and has been active in civic affairs. He is a director of the New Haven Chamber of Commerce and was deputy co-ordinator of the New Haven Defense Council during the war.

Writing from his home in Waltham, Mass., John M. Sherman brings his record up to date with a note which says in part: "We have a baby boy, David Richard Sherman, whom we adopted a week after birth. He is a husky little fellow, now almost two and a half years old. Peggy, my daughter, is a sophomore at Mount Holyoke College, where she is majoring in music. May I suggest that anyone interested in following economic developments in New England should not be without the *Monthly Review of Business Conditions* of the Federal Reserve Bank of Boston. This is a free service of the bank and is the principal product of the Research and Statistics Department, where I am serving as industrial statistician." Jack sent a copy of this very comprehensive and well-prepared report which can be obtained by addressing the Research and Statistics Department, Federal Reserve Bank of Boston, 30 Pearl Street, Boston 6, Mass.

Mrs. Conrad Driscoll has announced the marriage of her daughter, Jessica, to Winter Dean, Jr., on April 27 at Paxton, Wayzata, Minn.

Robert F. Miller, class photo-historian, sent a long letter about his preparations for showing our movies and slides on Alumni Day. Bob adds: "All the slides, numbering about 100, are now between glass to preserve them better. Included are some I took last summer at the Statler banquet. I have reassembled the movies of the 1941 reunion into one 200-foot reel, which is a grand record that will be cherished by the Class for years, particularly in view of those who have passed on. To see these films will always bring back fond memories and it is too bad to have so few feet of film of the 25th reunion. It is much too short and I wish others who took pictures would let us have them for inclusion in the record."

If you have any film of our last reunion, please bring it along on June 11. — CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

• 1922 •

Since writing the notes that appeared in the May Review, the Convocation and Dr. Killian's Inauguration have come and gone. Those of the Class who returned to Cambridge for these great occasions were agreed that it was well worth while. The Institute did a very professional job of arranging and all went off as smoothly as if it were being done every day.

The list, which is believed to be substantially complete, of the members of the Class who were present follows: Dave Abrahams, Myer Alpert, Parke Appel, C. Hall Baker, Harold Berry, Freddy Blackall, Don Carpenter, Yard Chittick, King Crofton, Robert F. Cummings, George Dandrow, Larry Davis, Stu Dimmick, Buck Eacker, Minot Edwards, Warren Ferguson, Whit Ferguson, Bill Freeman, William C. Gilman, Morris Gordon, Clate Grover, Dave Harris, Brod Haskell, Jack Hennessy, Barrett Hindes, George Holderness, Oscar Horovitz, H. L. Humes, Ab Johnson, Frank Kurtz, Jack Liecty'24, Dunc Linsley, Hector Lopez, Horace McCurdy, Arnold Milliken, Winslow Morse, Bill Mueser, Joe Patty, Judd Payne, Bill Pinkham, Fearing Pratt, Les Price, Bob Purinton, Al Redway'23, Sam Reynolds, Charlie Rudderham, Bob Russell, Paul Ryan, Sam Seegal, Tom Shepherd, Dale Spoor, Tommy Thomson, Bob Tonon, Lawrence Trowbridge, and Ham Williams.

A few of the wives came along, among them being Mrs. Carpenter, Mrs. Chittick, Mrs. Dandrow, Mrs. Whitworth Ferguson, Mrs. Freeman, Mrs. Hennessy, and Mrs. Mueser. Ab Johnson and Al Redway had their daughters in tow.

George Dandrow, as president of the Alumni Association, did his part in the activities with perfection. He also was host to a sizable group at the Algonquin Club immediately preceding Mr. Churchill's speech at the Garden.

Sam Reynolds reports having had the pleasure of a short visit with Vivian Preloran, the 19-year-old daughter of Luciano Preloran. Miss Preloran told Sam that her father had been very disappointed in being unable to come to the 25th reunion at Marblehead. Preloran is sales manager with the Compania de Electricidad del Sud Argentino. He has two other children, a daughter 16 and a son 12.

An interesting letter has been received from H. Richard Allen who before the war was in business in Singapore. He writes in part as follows: "The Japs, of course, took my former business away when they invaded Singapore. After more than four years in the Navy I returned there but did not re-establish myself, although I still have considerable interests in that part of the world. For some time now I have been permanently located in San Francisco and have recently started in business again together with my brother-in-law with whom I have been associated for many years in various activities in Malaya. We are handling the sales and distribution of both technical and nontechnical lines in the western states, and if you know anyone who wants help in selling anything out here, I'll be happy if you will refer them to us." Allen's firm is Frankel and Allen, 400 Montgomery Street, San Francisco 4, Calif.

Frank Kurtz, President of the American Coffee Corporation, was re-elected president of the American Brazilian Association at the annual meeting held in March at the University Club in New York. This association, which is in its 21st year, is engaged in fostering cultural and trade relations between Brazil and the United States. — Ed Fales, looking hale, hearty and, shall we say, somewhat heavier, was in Boston on a business trip on April 14. Ed, for the last five years, has been with the American Welding and Manufacturing Company of Warren, Ohio, of which company he is now vice-president.

Ab Johnson seems like a Muncie-to-Boston commuter. He was here for the Convocation, and on April 20 reappeared to give a talk on business management to a group of Professor Schell's graduate students. Ab's daughter, Joanne, and Whit Ferguson's daughter, Barbara, both will graduate from Wellesley in June. Your Secretary would appreciate it if other members of the Class having children who graduated from school this year would write in so that this interesting news can be included in the next issue of The Review.

New addresses: Rudolf H. Blatter, in care of American Embassy, Athens, Greece; J. Robert Wolf, 411 Ellsworth Court, San Mateo, Calif.; William C. Gahagan, Box 428, Summerville, S.C.; William E. Zimmerman, 2343 N.W. Northrop, Portland 10, Oregon. — C. YARDLEY CHITTICK, *Secretary*, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo, N.Y.

• 1923 •

There was a good representation of 1923 men at the history-making Mid-

Century Convocation at the end of March and the first of April. The following is probably not a complete list of all members of the Class who were registered, as it is taken from the sheets which were posted to provide an opportunity for persons present to record themselves by classes. The names are listed in the order that they were entered on the 1923 sheet: Joseph L. Hetzel, Waterbury, Conn.; Franklin K. Haven, Jervis B. Webb Company, Newton Center; E. Louis Greenblatt, American Optical Company, East Boston; James H. Evans, Boston Edison Company; Frank J. Travers, American United Life Insurance Company, Indianapolis, Ind.; Albert S. Redway, New Haven; Harold A. Dambly, Philadelphia Electric Company; J. R. Eiffe, Standard Oil Company of New Jersey; Dorothy W. Weeks, Professor of Physics and Head of Department, Wilson College, Chambersburg, Pa.; Horatio L. Bond, National Fire Protection Association, Boston; Egon E. Kattwinkel, Physician, West Newton; Howard F. Russell, Improved Risk Mutuals, New York; Harris Jones, Dean, United States Military Academy, West Point; George W. Bricker, Jr., Robert Heller and Associates, Inc., Cleveland; Prentiss B. Alger, Sprague Electric Company, North Adams; John W. W. Sullivan, Metallurgist, American Iron and Steel Institute, New York; Theodore M. Edison, President, Calibron Products, Inc., West Orange, N.J.; Benjamin Albert, Boston Edison Company; Benjamin Cooper, Taller and Cooper, Brooklyn; Charles R. Myers, 2d, Charles R. Myers and Company, Camden, N.J.; Wentworth T. Howland, Boston Woven Hose and Rubber Company, Cambridge.

Albert S. Redway assumed duties on March 28 as president and general manager of the American Paper Goods Company of Kensington, Conn. He has been serving as vice-president and general manager of the Geometric Tool Company of New Haven and he proposes to continue to reside in Hamden. He has been with the Geometric Tool Company since 1943 and was previously with the Old Colony Envelope Company in Westfield, Mass., and the Farrel-Birmingham Company of Ansonia, Conn. He is past chairman of the American Society of Mechanical Engineers. Some of his other connections were listed in recent class notes.

I have had some correspondence recently with Milton Orwin of the Kalamazoo Pant Company, who reports that he is having the fun of building a new home. — H. B. Gray is off on another trip this spring, this time to France, Switzerland and England. He expects to be back about the end of May. — Horatio Bond, *Secretary,* National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. Howard F. Russell, *Assistant Secretary,* Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

• 1924 •

The Class was well represented at the Mid-Century Convocation and some 33 members attended a cocktail party which was very suddenly put together. As no record was kept of the individuals present (other than the financial picture) we give herewith as many of those present as two of us can recall. There were many who have not been on hand for a long time. Russ Ambach, Blay Atherton, Frank Barrett, Paul Cardinal, Phil Cohen, Gib Cowan, B. A. Cushman, Cy Duevel, Dave Evans, Bob Foster, Jack Hennessy, Dick Jackson, Tom Johnson, Chick Kane, Andy Kellogg, George Knight, Dick Lassiter, Pret Littlefield, Joe Lusignan, Bill MacCallum, Joe Mares, Joe Naughton, George Neitlich, George Parker, Gene Quirin, Nate Schooler, Ed Sheiry, Lefty Walker, and Ed Wininger. It was a good pre-reunion gathering.

The New York finance committee held its last meeting on April 25 at the Engineers Club. Money is coming in faster, but not fast enough, as I am sure each of you have noted from Chick Kane's news letters. Incidentally, I think Chick is due much congratulation for the work he is doing on these class letters and I am sure you will all agree. Some 96 reservations had been made at East Bay Lodge by the time these notes were written. If you have not ordered your copy of the class history book better do it quickly before they're all sold out. Don't forget the dates, June 8th, 9th and 10th at Osterville and then Boston on the 11th for the Alumni Banquet. — Francis A. Barrett, *General Secretary,* 234 Washington Street, Providence, R.I. William W. Quarles, *Assistant Secretary,* 330 West 42d Street, New York 18, N.Y.

• 1925 •

Your Secretary was unable to be present at the Mid-Century Convocation, but a goodly number of class members attended. In a list supplied by The Review office, and described as obtained from the sheet voluntarily signed during the exercises, and, therefore, possibly incomplete, appear the following names: Malcolm Davis, I; George N. McDaniel, Jr., I; Max Levine, II; Ray N. Wheelock, II; Charles R. Muhlenberg, IV-2; Lawrence A. Cusolito, Jr., V; Edward B. Alexander, VI; Thomas J. Killian, VI-A; James S. Woodward, VI-A; Charles A. Giblin, IX-B; James N. Andreson, X; George C. Caine, X; Edward R. Harris, X; Henry C. Hoar, X; Meyer Shacat, X; Arthur M. Sharp, X; Roland E. Cernea, XIII; Theodore G. Coyle, XIV; Henry V. Cunningham, Jr., XV; Ronald A. Mitchell, XV; William Steinwedell, XV; Donald R. Taber, XV; and Arthur F. Merewether.

In a recent group of notices from the Alumni Register I received word of the death on October 22, 1948, of Harold H. Siegel, X, of Chicago. Details are lacking, but the 1948 Register lists him as chief metallurgist of the Howard Foundry Company in that city. We would be glad to hear from any Chicago Alumnus who could supply us with information concerning Harold's career, and the cause of his death.

The West Roxbury *Transcript* of Boston reports that memorial services for Lieutenant Colonel Roger Parkinson, who was killed in Holland on September 26, 1944, were held at the West Roxbury Methodist Church on January 22, 1949. The following quotation is taken from the clipping: "Roger Parkinson was born January 18, 1902, and resided in West Roxbury at 30 Westover Street until his graduation from M.I.T. in 1925. He was the son of the late George A. Parkinson, who passed away in 1933, and Mrs. Alice Atwood Parkinson, who still makes her home on Westover Street. Col. Parkinson was employed by the American Sugar Refining Co. in Brooklyn, N.Y., from 1926 until he was called for active duty in 1941. He was married in 1929 to Ruth Briggs of New Rochelle, N.Y., where they made their home. His wife and their three children, Roger, Betsey and John, were here for the funeral and have returned to New Rochelle. A posthumous award of the Purple Heart was made to his widow."

The Hartford, Conn., *Times* of February 11, announced the election of William J. Mahoney, IX-B, as executive vice-president of the American Coal Company of Hartford. The *Times* adds: "Mr. Mahoney, a registered industrial engineer of more than 20 years' fuel and heating experience, is a graduate of M.I.T. Prior to his new appointment he was general sales manager for American Coal." — The late Kenneth D. Kahn'15 sent in a clipping, dated February 9, from the radio program of a Los Angeles newspaper, of the following announcement: "Mrs. Mabel Rockwell, electrical engineer, KMPC at 12:30."

In last month's notes I quoted from a letter I had received from Geoff Roberts in South Africa. In it he mentioned his forthcoming vacation trip to England and the United States. A few days ago I received a letter from him announcing a complete change of plans. But let him tell it himself: "When I came home from work three weeks ago my wife handed me two cables. One was from San Francisco, from a childhood friend who has risen to be manager of Pacific Tin Consolidated Corporation in Malaya. The cable stated that my friend had recommended me for the post of electrical engineer of the corporation in Malaya. The other cable, from New York, offered me the job. I decided almost immediately that I could not possibly turn the job down, particularly as my wife was almost bouncing to go, but I spent a sleepless night trying to sort out the implications. I showed the cable to my boss the following morning, and told him I intended to accept the job. . . . I am flying out to Malaya. I leave here the night of April 21, on South African Airways, bound for Cairo. I leave Cairo on April 23 on BOAC for Karachi, Calcutta, and Singapore. My destination is Kuala Lumpur, one-and-a-half hours flying time from Singapore, on Malayan Airways. My address there will be: Box 292, Kuala Lumpur, Malaya. My wife is traveling by sea. We are trying to get reservations for her on the *M.V. Tegelberg,* sailing from Durban on or about May 7." Geoff has a three-year contract, and hopes to pick up his plans to visit the United States at the expiration of that period. I am sure that we all wish him well on his new job.

In March I received the following letter from Doc Foster: "You may be interested in having a little information as

to my activities during the past month. Early in February, I started with Mrs. Foster to attend the annual meeting of the American Institute of Mining and Metallurgical Engineers in San Francisco. We were accompanied in the early part of our trip by George P. Swift'24, and Mrs. Marjorie Swift'41. In addition to taking in the technical sessions at the A.I.M.E. meeting, I visited the Argonne National Laboratory in Chicago, Stanford University and the Stanford Research Institute at Palo Alto, University of California in Berkeley, and California Institute of Technology in Pasadena. Also, I spent interesting and educational days at four government research and test installations. Needless to say, we were able to see many points of interest as well and made very good use of every waking moment from the time we left until we arrived back in Boston. We spent one full day at the south rim of the Grand Canyon, made a trip to Carlsbad Caverns in New Mexico, and because of the stop-over between trains, we were able to have nearly a whole day in New Orleans.

"I had hoped that there would be an opportunity to see and talk with Tony Lauria while in Chicago, but time did not permit. Tony is still with Sears Roebuck and Company and wrote to me not long ago that he is extremely busy and expecting to be doing a great deal of traveling during the winter and spring months. He indicated that competition seems to be coming back into business and he has been tied up with the making of a movie which is aimed at teaching employees more about the art of selling. With the completion of the movie, he expected to be asked to go around to the large cities and take over the handling of meetings for its presentation. At the annual banquet of the A.I.M.E. I saw Bill Wraith'26 just long enough to say hello. The activities at this banquet were of particular interest to Bill since his father was one of the honored guests at the head table and was the recipient of one of the medals awarded for distinguished work in the mining and metallurgical field.

"Needless to say, I did not pass through Los Angeles without seeing our good friend George Blonsky who is actively engaged in mining work with headquarters in Los Angeles and is living only a few miles from the business center of of that city. George is the same fellow we knew 20-odd years ago and he and Mrs. Blonsky did a grand job of entertaining us on Washington's Birthday by showing us some of the city and serving us a delicious dinner at their home in Rosemead. In his limited back yard, George is raising rabbits, chickens, pigeons and ducks and, from my observations, is doing quite a job at it. Charlie Tonry'26, III, and his wife were at the Blonskys' for dinner the night we were there so that all together we had a most enjoyable reunion. I called at the offices of American Smelting and Refining Company in El Paso in hopes of finding Ariel Horle'26, but found that he had left a few days ago on a trip." — HOLLIS F. WARE, *General Secretary*, Post Office Box 52, Godfrey, Ill. F. LEROY FOSTER, *Assistant Secretary*, Room 5–105, M.I.T., Cambridge 39, Mass.

• 1926 •

I am happy to announce that in response to a request from our Class President, Dave Shepard, George Warren Smith has agreed to become secretary-treasurer of the Class. This will be the last set of notes prepared by me, and beginning with the next issue of The Review the Class will have the benefit of a new voice and new recorder. I am delighted that George is going to take over the secretaryship. He has effectively served as class agent for the Alumni Fund, he has been a representative on the Alumni Council, and he has actively participated in the planning of most of our class functions in recent years. He probably has as wide contacts among the members of the Class as any one of us, and he and Dave will make an ideal team for our class officers.

With the knowledge that George is to carry on, I relinquish the class secretaryship with pleasure but I also do so with a sense of loss. I thoroughly enjoyed the opportunity which I have had for 23 years to keep in touch with the members of the Class, to continue old friendships, and to develop new ones. I think I have a pretty good knowledge of the Institute's alumni group and I can say without reservation that our Class is one of the most loyal and friendly groups that I have observed among all the classes at the Institute. I have also enjoyed the opportunity to report monthly in The Review, and I must confess a certain amount of pride that with the help of Miss McMasters I have missed only one issue of The Review during the entire period. It has been a lot of fun to be secretary.

There were many aspects of the M.I.T. Convocation and the Inauguration which I found moving and memorable and certainly one of these was the meeting of the Class, which took place on Saturday afternoon following the Inauguration. I had expected to find a small gathering of '26 men from around Boston and I was completely flabbergasted to find upon arrival at the Somerset Club the extraordinary gathering of classmates from all over the country. I was still more flabbergasted when Dave Shepard presented, in behalf of the Class, the movie camera, which apparently George Smith and Pink Salmon had selected after consulting with my family. I was still more astonished several days later to find in my office the movie projector, which came as a gift from the Class to Mrs. Killian. We both deeply appreciate this friendly generosity and we both are delighted to have equipment which we had long wished for. May we both take this opportunity of thanking all members of the Class for their generous and friendly gifts.

I also was delighted to receive the colored portrait of Dave Shepard in its leather case, which now adorns my office. I am getting repeated comments to the effect that, "Oh, that is the handsome man who made the delightful speech at the Inauguration." To those members of the Class who were not present at the Inauguration, it should be noted that Dave was one of the speakers, representing all M.I.T. Alumni, and that he delivered a most gracious and effective address. As I said at the Saturday afternoon meeting, we were privileged to have at our Convocation two distinguished and eloquent visitors from England, Winston Churchill and David Shepard.

Below is a list vouched for by George Smith and Pink Salmon of those who were present at the cocktail party on April 2: Harvey Abbott, George Apel, Sidney Baylor, Martin Bergen, Eliot Bidwell, Lyman Billings, Matthew Blume, Rexford Bristol, Arthur Brockelman, Saul Brodsky, Frederick Broughton, Walter Campbell, Nick Carter, Donald Chase, Robert Chidsey, George Cohen, LeBaron Colt, Robert Conly, Basil Constantine, Irving Cowperthwaite, Laurence Cumming, Donald Cunningham, Louis Darmstadt, Robert Dawes, Robert Dean, Alfred Dolben, James duPont, George Faithfull, Martin Fireman, Austin Ford, William Forrester, and Raymond Freeman.

Also Alfred French, Guy Frisbie, Anthony Gabrenas, Natale Gada, Edwin Gohr, Julius Goldberg, Thomas Green, Mark Greer, Warren Hamblet, Eben Haskell, William Hinckley, Henry Hoar, Samuel Homsey, Joseph Houghton, Harry Howard, Nelson Howlett, Elmer Ingraham, Dick Jones, Barron Lambert, Albert Lamoureux, Ted Larratt, William Latham, Richard Lee, Joseph Levis, Albert Libbey, Walter Lobo, Philip Loew, Kenneth Lord, William Lowell, Raymond Mancha, Theodore Mangelsdorf, Benjamin Margolin, Angelo Maschi, Dan McGrew, Frank McKeon, John McMaster, Malcolm McNeil, William Meehan, David Meeker, Morris Minsk, Robert Morrissey, Irvin Murray, and James Offutt.

Also Cecil Ogren, Herman Olander, Thornton Owen, Nathan Pearlstein, Stewart Perry, Marvin Pickett, Sterling Pratt, Leonard Remington, Benjamin Richardson, Philip Richardson, Henry Rickard, Robert Rogers, William Rooney, Winslow Russell, Stanley Sawyer, John Searles, William Sessions, Roger Smith, Elton Staples, George Steele, Alfred Steensen, Dwight Taylor, Flint Taylor, George Taylor, Frank Toperzer, Charles Topping, Cedric Valentine, Shepard Vogelgesang, John Walker, Martin Walter, George Wardner, Elmer Warren, George West, Earl Wheeler, Abraham White, Richard Whiting, Otto Wiessner, John Wilbur, Harold Willoughby, John Wills, Edward Wood, and Morton Woodason.

It was a delightful reunion and I shall long remember and cherish the opportunities I had there to see so many of the Class and to experience the warmth and friendliness of the group.

And now for a few final notes. Dorothy Quiggle has written a pleasant letter about the Convocation, but she pointed out that she was disappointed to discover that there was not a single woman among the M.I.T. Faculty who were represented in the inaugural procession. I must admit this soft impeachment but would add that we do have women on our staff although they have not yet attained professorial status. Dorothy, Associate Professor of chemical engineering at the Pennsylvania State College, is demonstrating that women members of the Class of 1926 are achieving distinction in the academic world.

Whitney Ashbridge reports the arrival of a third child and first daughter, Anne Maria, on March 21 in Caracas, Venezuela. – A recent note from his widow brought us the sad news of the death of Fred C. Norby, who was struck by a car on Christmas Eve and fatally injured. He had been chief clerk for Shell Oil in Seattle. – JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

• 1927 •

The Convocation was a real event. It was one of those special occasions when M.I.T. took over the Boston-Cambridge area; even to the point of the Ritz Carlton Hotel having a few M.I.T. Coats of Arms in every elevator. It is hard to tell just who of the 1927 Class was there, but I saw Jack Herlihy, William Payne, Tom Knowles, Jim Buckley, Dave Truax, Don Spitzli and Dick Hawkins. These were mostly seen at the Churchill reception. Others who were there included: H. P. Ferguson, Henry T. Lyons, Laurence H. Coffin, F. D. Sparre, Louis F. Eaton, Edward O. Jones, Felix Bardach, Alfred L. Jacobson, Maurice Davier, J. S. Bancroft and Francesco Marcucella. – I learned from Bud Cole's New York stepsister that he is still in Palo Alto, Calif.

We regret to record the death on March 5 of Gaillard Hunt, Jr., who lived at 51 East 98th Street, New York City and before that at Pawleys Island, S.C. – JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

• 1929 •

As a last call, don't forget the 20th reunion at East Bay Lodge, Osterville, Mass., on the 12th, 13th, and 14th of June, directly following Alumni Day on June 11. Although it is too early to predict, Chairman Johnny Wilson reports favorable replies from some 50 of the boys, so we can be sure to expect a good turnout. Don't fail to come even though you can only stay for a day. – FISHER HILLS, *Acting Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

• 1930 •

President Killian's Inauguration and the Convocation that preceded it attracted at least 16 of our classmates whose names were recorded or who were seen by your Secretary. No doubt a larger number of you attended the evening exercises at the Boston Garden and were lost in the shuffle as regards personal recognition. Bill Harris and I consoled each other in our vain attempts to enter Rockwell Cage for the Inauguration. Long-distance honors on this occasion went to Dave Wells from St. Louis, Mo.

Class President Jack Bennett was on hand all the way from Akron and spent a good deal of his time drumming up interest in our 20-year reunion in 1950, which was mentioned in the May issue of The Review and which will be mentioned every time you see 1930 represented in these columns, from now until then! May we suggest that you members of alumni clubs in various corners of the country talk it up with every 1930 man you see at club affairs. The Boston group will get together on Alumni Day and do likewise.

Warren Dolben has moved from Brecksville, Ohio, to 295 Fifth Avenue, New York City, where he is with Wornock Mills. – Captain Ken Earl is in Alaska as part of the Navy's Alaskan Command. Bob Henderson has shifted his mining operations from Climax, Colorado, to Farmington, N.M.

News items concerning you and your classmates will be welcomed by – PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries:* ROBERT M. NELSON, 2446 Iroquois Road, Wilmette, Ill.; ROBERT A. POISSON, 105 East 88th Street, New York 28, N.Y.

• 1935 •

A short letter from Hal Bemis states that he attended the Mid-Century Convocation in Cambridge where he saw a number of classmates and reports that Brooks Morgan has moved from St. Louis to Fullerton, Calif. Hal gives no particulars about himself, but I happen to know he had a set of eagles in Europe several years ago, and is back pitching for Campbell's Soup in Canada. His home address is 60 Birmingham Street, New Toronto, Ontario. Dudley forwarded a list of classmates who voluntarily signed the class sheet provided in Building 7 during the Convocation. They were: Irv Banquer, Charlie Bowen, Elmer Szantay, Prescott Smith, Les Brooks, Pete Grant, Jack Burton, Tom Hafer, Walt Stockmayer, Tom Keeling, Wes Loomis, Nix Dangel, Bernie Nelson, Johnnie Alden, Biss Alderman and Charlie Scott. By deduction from Hal's letter, I gather that Jack Colby, grand mogul of 1935, was also on hand.

A clipping forwarded by Obie Denison '11, whom others may also recall as a spark plug at freshman camp, explains how Art Lariviere, President of the Home Owners League of Worcester, is organizing property holders in the vicinity on matters of taxation and civic improvements pending in the legislature. Laurence Cleveland, who earned his master's in 1935, is an associate professor of electrical engineering at Northeastern and was nominated for the vice-chairmanship of the Boston section, American Institute of Electrical Engineers, this spring. A change of address notice shows that Mike Kelakos, who has been a chemical engineering advisor to European reconstruction agencies for several years, has returned to Lowell. Jack Holley reports seeing Whit Stueck in Ivoryton, Conn., recently. Ivoryton is down New London way and is the home of W. Whitney Stueck, Inc., bending brake manufacturers. Classmates with ideas of bending something other than ears and elbows are invited to think of "Connecticut Brakers." Whit is a yachtsman of some accomplishment backed by experience also as a builder. He has two youngsters and is putting the finishing touches on a home he built a year ago.

Perhaps all of us do not identify Elmer Szantay, president of the Sandee Manufacturing Company, Chicago, with the advertisements for extruded plastics that appear regularly in The Review. Les Brooks is a research chemist with the R. T. Vanderbilt Company, East Norwalk, Conn. Bob Landis, who spent several years in Seattle, is with Pratt and Whitney Aircraft, East Hartford, and lives in Manchester, Conn. Paul Daley keeps very much to himself, so far as word to me is concerned, out in Aurora, Ill., where he works for All-Steel Equipment, Inc. George Reece is with Fay, Spofford and Thorndike and lives in Chestnut Hill. Remember, fellows, it's reunion 15 in '50 for '35. – J. BARTON CHAPMAN, *General Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

• 1937 •

Our Class shared in the pride of M.I.T. Graduates all over the world as a result of the excellent and timely Mid-Century Convocation. To our new President we pledge our loyalty and place our hope that M.I.T. will continue to lead the way, through science. Our only record of attendance at the Convocation was a voluntary register – so, although not complete, here follows the class listings: Ralph B. Chapin, Charles F. Healey, Edwin L. Hobson, Clifford A. Lytle, Willard Marcy, John B. Nugent, Jervis C. Webb, Duane O. Wood, William C. Wold.

I hear that Harry B. Goodwin has joined the staff of Battelle Institute, Columbus, Ohio, as research metallurgist. Harry was most recently with Johns Hopkins engaged in contract research. – Walter L. Hughes's appointment to an assistant professorship in physical chemistry has been announced by the Harvard Medical School. – WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. WALTER T. BLAKE, *Assistant Secretary*, Research Products Development Division, Pillsbury Mills, Inc., Minneapolis, Minn.

• 1940 •

From Ray Keyes out in San Francisco comes a nice letter telling me something of what he has been doing the past few years. Ray and I had a date in San Francisco in 1945 but he stood me up by not arriving until 1946, and by that time I had reached my Ozark habitat. Ray writes that at present he is with Thomas T. Lunde Associates, consulting engineers. "We are sort of an 'available Jones' in the engineering field. With mechanical, electrical, mining, civil, and marine engineering being among the talents of our office, we are prepared for any work of an engineering nature. The marine engineering conversion design of the Matson's passenger vessel *Lurline* was among our various jobs in the ship conversion activities in this region. One of our jobs, a tug, made a historic long-distance tow to Brazil, while another, a former Navy gunboat, made a similar trip to Manila, and is probably carrying copra, hemp, and lumber around the South Seas. In view of the sick state of the shipbuilding industry on this coast, I look forward to my future work being more landlubbing than in the past.

"For my outside interest, I try to take

some advantage of our pleasing climate and beautiful surroundings. Once a month, I travel to some local park with my Boy Scout troop for a week end of camping. In the summer, I try to make a two-weeks' stay with them in the grandeur of the High Sierras. My interest in archery has led me to bow-and-arrow deer hunting; no venison yet, but wait until next season (?). After five years of retirement, I resumed gymnastics by working out with the University of California gym team. I have been participating in A.A.U. competition, but not with the success I had at M.I.T. The San Francisco Young Men's Christian Association appointed me as their gymnastic coach. Since I started that job the 'Y' has been undefeated, but that is due more to the quality of our gymnasts than to my coaching ability. One of the boys is a natural, and I hope some day to see him a national champion. Among the Course XIII boys in this area are Bob Hall, Fred Noonan, and Al Thewlis. All are good family men, having a half dozen children among them. Al is the champ; he has three, two boys and a girl. I play lone wolf, but envy of the family men got the better of me, so I adopted a daughter in Czechoslovakia through Foster Parents Plan for War Children. Al Thewlis was located aboard the aircraft carrier *Anteitam* and one of his activities included participation in a motion picture complete with Gary Cooper, Walter Brennan and other Hollywood stars. Al's part included five spoken words. As Al puts it, he will probably end up as the 'face on the cutting room floor.'" (Keep that group together, Ray, I'll be out in August or September, I think, for a short time. H.G.W.)

John R. Pellam has been appointed to the staff of the National Bureau of Standards, where he will be concerned with research in the Cryogenics Laboratory. Dr. Pellam has conducted studies in ultrasonics and low temperature, including sound diffraction, absorbing materials, ultrasonic velocity and absorption, and liquid helium. In his present research he will continue his investigation of the properties of liquid helium II.

Claude E. Shannon, research mathematician at Bell Laboratories, was selected to receive the 1949 Morris Liebmann Memorial Prize of the Institute of Radio Engineers. The prize was presented on March 9 at the award dinner which culminated the Institute's annual convention. The award consists of a cash sum and a medal, and is regarded as one of the outstanding honors of the scientific world. Dr. Shannon was cited "for his original and important contributions to the theory of the transmission of information in the presence of noise." He has been a member of the technical staff of Bell Laboratories since 1941, and is a native of Gaylord, Mich. He received a master of science degree in electrical engineering from Technology and a doctor's degree in mathematics as a member of our Class.

The following members of 1940 indicated their presence during the convocation by signing the list provided on the bulletin board in Building 7: Clark Goodman, Physics Department, M.I.T.; E. H. Seim, Bridgeport, Conn.; Wesley Van Sciver, Wynnewood, Pa.; David M. Johnstone, Stonington, Conn.; Charles Epstein, Fall River, Mass.; Richard B. Lawrance, Research Associate, Physics Department, M.I.T.; Thomas F. Creamer, Scarsdale, N.Y.; David T. Morgenthaler, Erie, Pa.; A. G. Bucklin, Division of Industrial Cooperation, M.I.T.; R. A. Bittenbender, Waban, Mass.; and Robert S. Hess, Research Associate, Civil Engineering, M.I.T. — H. GARRETT WRIGHT, *General Secretary,* in care of Garrett Construction Company, Main Post Office Box 629, Springfield, Mo. THOMAS F. CREAMER, *Assistant Secretary,* 6 Berkley Road, Scarsdale, N.Y.

• 1941 •

We received a blue bordered card announcing the arrival of William Guy Kussmaul, 3d, on March 9. — Butch Berman gave up his bachelor state last month. Bob Alfred, Les Gott and Ernie Kaswell '39 were in attendance at the wedding. — We heard Mr. Churchill speak at the Boston Garden and managed to bump into Johan Andersen, John Sexton and Ken Bohr, and wives, all headed for the reception at the Hotel Statler. Rog Finch and his wife were also in attendance.

We are running out of news so will have to fill in on our own. The girl is Esther Ross and the next issue of this column will find your Secretary out of the single class. Who is left on the other side? — STANLEY BACKER, *General Secretary,* 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary,* Saddle Hill Farm, Hopkinton, Mass.

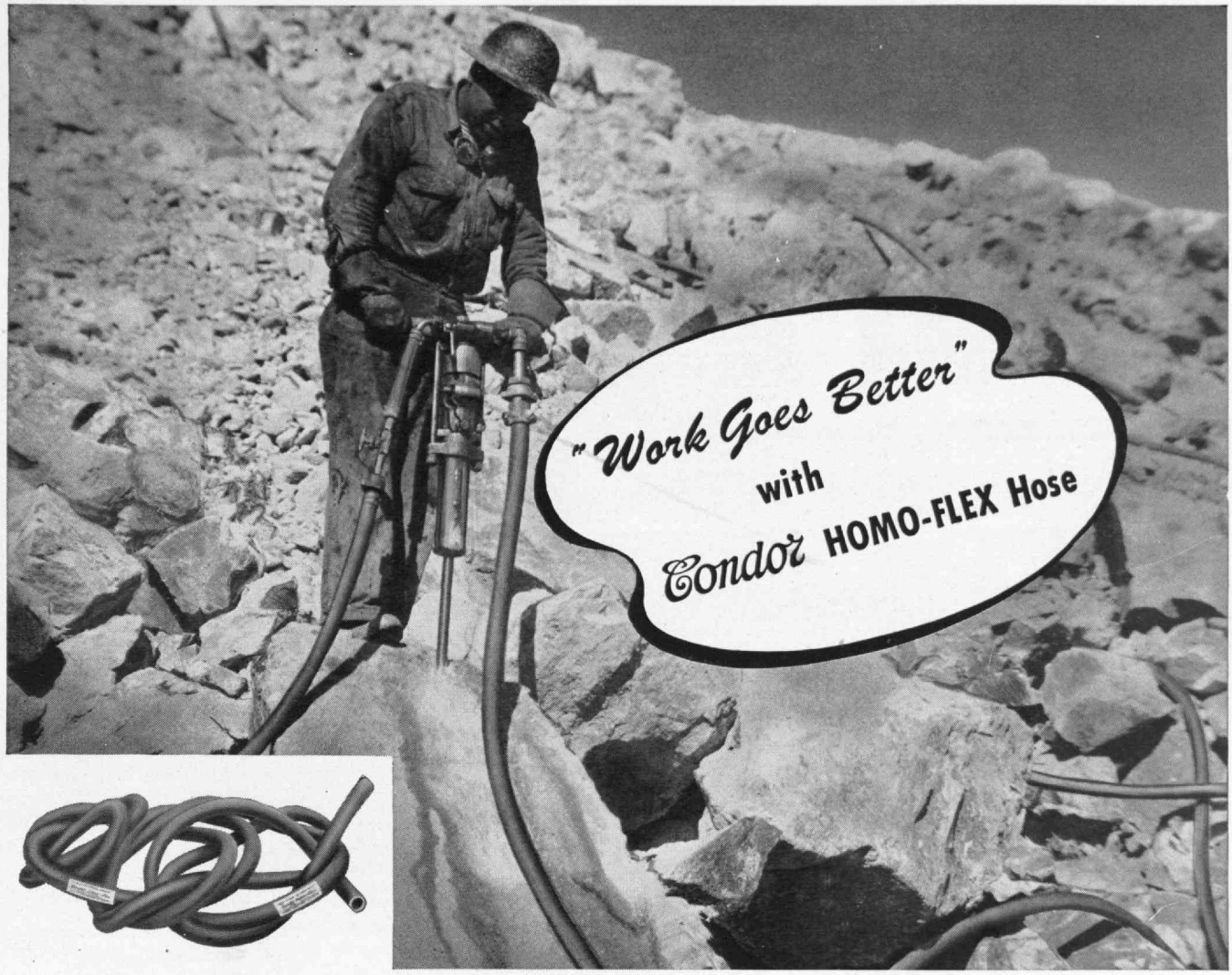
• 1946 (6-46) •

Seymour Collins, II, is now a mechanical engineer with the Oil Well Supply Company, Oil City, Pa., and continues his membership in the American Society of Mechanical Engineers and the Northwest Pennsylvania Society of Engineers.

Mrs. Berman tells me that son Ralph, VI, is now at Cornell University Business School where he is on the Dean's list, skis week ends, weather permitting, and "having a wonderful time." Ralph spent two years as an engineer with the Raytheon Manufacturing Company of Boston and expects to finish at Cornell in June of 1950. Arthur Horton, Jr., VI, is now an electronics engineer with the Bell Aircraft Corporation in Buffalo, N.Y. Art continued on at Technology after June of '46 to obtain his master of science in electrical engineering in February of '48. All three classmates have yet to "walk down the aisle."

Edwin Schlang, X, is now chief chemical engineer for Waljohn Plastics, Inc., extruders, molders and compounders of all types of thermoplastics. Ed married Irma Schub of Brooklyn, N.Y., on October 12, 1947, and he writes that they are happily married and settled now in their own home in Brooklyn. Ed is a member of the Society of the Plastics Industry and a member of the American Institute of Plastic Engineers. Jack Filbert, XIII, is now with Long Island Lighting Company, the chief light and gas utility of Long Island, New York, and is still a bachelor, academically and socially.

Thank you for the cards, classmates. We shall try to get the news of the rest of you into the next issue of The Review. — JAMES W. CHURCH, *Acting Review Reporter,* 103 Quincy Street, Roxbury 21, Mass.



. . . because Condor Homo-Flex is the "Easier Handling Hose"

The name "Homo-Flex" embodies the two most important engineering principles in this modern hose construction:

HOMOGENEOUS

The hose wall, tube and cover are one homogeneous unit of Flexlastics. There can be no separation from the cord Strength Member to shorten the life of the hose.

FLEXIBILITY

Strength without Bulk results in a hose that has been called "Flexible as a Rope."

These two features, Homogeneous Construction and Flexibility, spell "Homo-Flex." To the man who must constantly handle hose, attached to portable air tools or other moving equipment, the superior qualities of Condor Homo-Flex Hose are quickly admitted. "The work goes easier" he says . . . and the extra production per shift proves it.

Condor Homo-Flex Hose lasts longer, too. It takes sharper bends without kinking. Its new construction "gives" and "takes" with the rapid surges of working pressure so that constant pounding cannot weaken the hose wall.

Standard types of Condor Homo-Flex include Air Hose, Oil-Proof Air Hose, Water Hose, Orchard Spray Hose, Paint Spray Hose, Creamery and Packers Hose, Pressing Iron Hose, Butane Hose, Suction Hose, Rock Dusting Hose. Send for free bulletin.

(Note: Manhattan engineers have recently developed Ray-Man Homo-Flex Air Hose with Rayon for strength and lightness)

("Flexlastics" is exclusive with Manhattan)

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RAYBESTOS-MANHATTAN INC.

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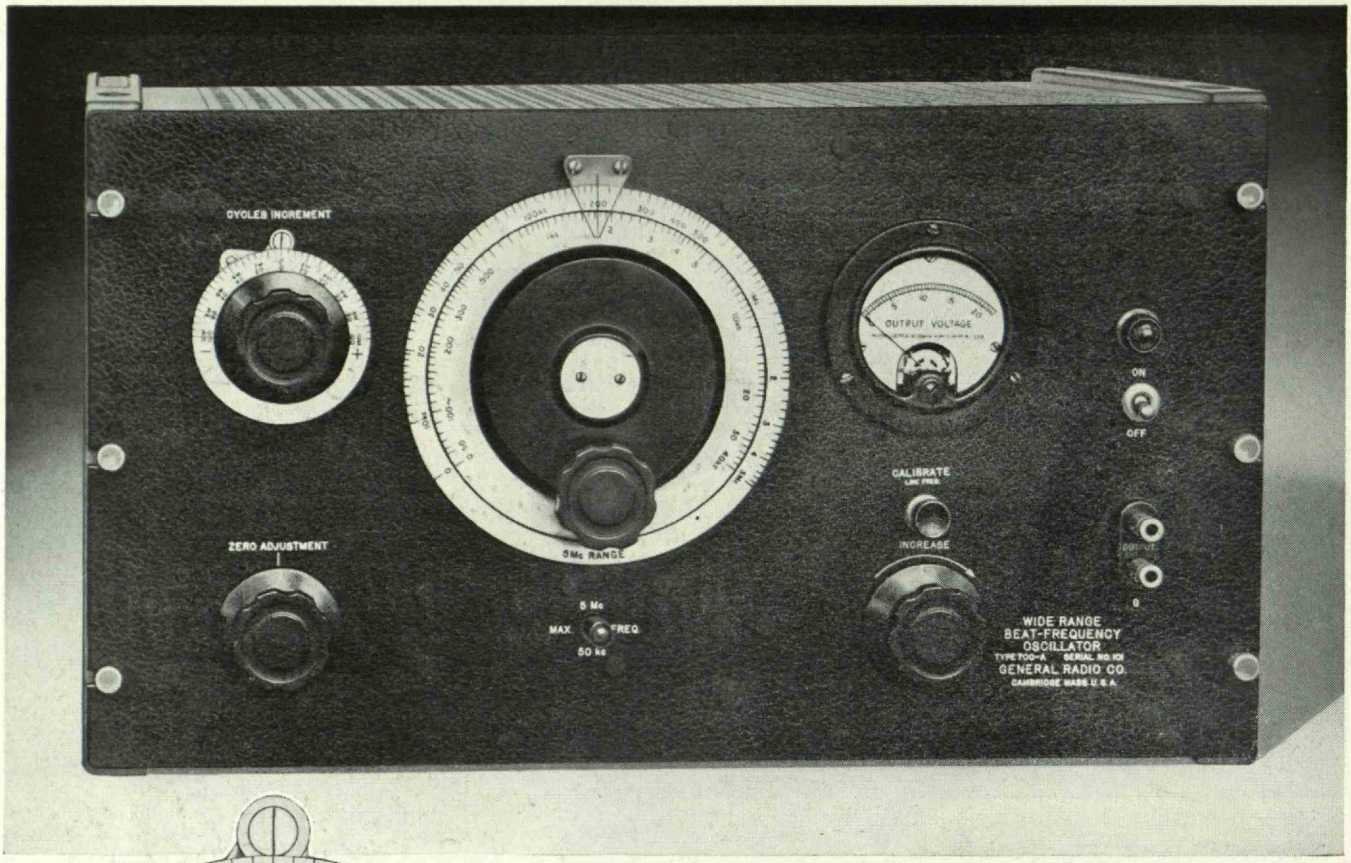
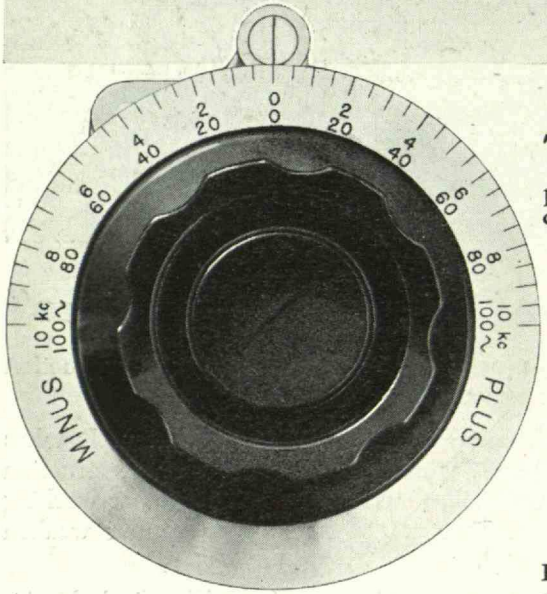




FREQUENCY CONTROL AND CALIBRATION

The main dial is direct-reading on two approximately logarithmic scales for 50 cycles to 40 kilocycles and 10 kilocycles to 5 megacycles. The incremental frequency control (above) is calibrated between −100 and +100 cycles and −10 and +10 kilocycles for the two respective ranges.

50 CYCLES TO 5 MEGACYCLES

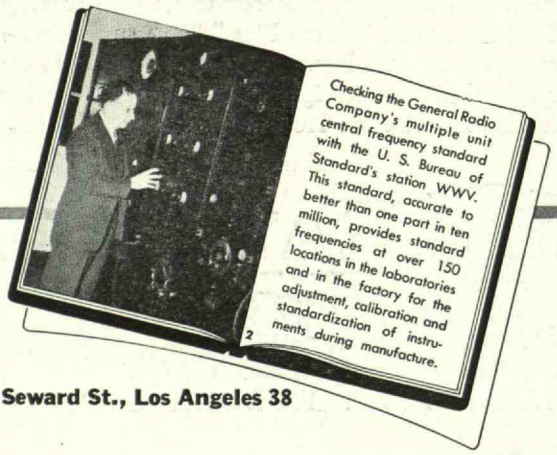
THIS wide-range beat-frequency oscillator has a number of novel circuit arrangements which make it very valuable for use not only as a general-purpose laboratory oscillator, but also for testing all sorts of wide-band circuits and systems.

1. The exceptionally wide range is obtained with a single control knob and a two-position range selector switch
2. The output voltage, by means of an a-v-c circuit, is held constant within ±1.5 decibels over the entire range
3. Frequency drift is held to a very small value through carefully designed thermal distribution and ventilation systems
4. Any small drift remaining may be eliminated by resetting the oscillator to zero beat
5. A degenerative amplifier minimizes hum and distortion and also equalizes the frequency response
6. The output voltage is measured by a v-t voltmeter across the output terminals
7. Calibration may be standardized at any time to within 5 cycles and 500 cycles on the low and the high ranges, respectively

For taking selectivity curves on tuned circuits over a wide range of frequencies this oscillator is especially useful in that these measurements may be made very rapidly and accurately with this instrument.

TYPE 700—A WIDE-RANGE BEAT-FREQUENCY OSCILLATOR $700.00

WRITE FOR COMPLETE DATA



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